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This monthly report contains a comparison of Two-way Satellite Time Transfer (TW), Common-view Time Transfer (CV), and Carrier-Phase Time/Frequency Transfer (CP) data analyzed at USNO. Time transfer data is tabulated and analyzed in a one-point-per-day format for the list of timing labs given below. Because we currently process TW data only for those baselines which include USNO, not every baseline combination of these labs is included in this report.

AMC Colorado Springs, Colorado U.S.A

NPL Teddington, Middlesex, UK

PTB Braunschweig, Germany

TUG Graz, Styria Austria

USNO Washington, D.C. USA

### **HOW THE TABLES ARE CALCULATED**

For each baseline, time-transfer data are collected from each of the TW, CV, and CP analysis groups at USNO. To each data time series, a one-day linear fit is made. From this fit, a value for time-transfer is selected which corresponds to an epoch at which a TW data point exists. For those days without TW data, the CP and CV time-transfer value is related to 12:00pm UTC. Also, the RMS scatter about each linear fit is given in the table.

Following each table are graphs of TW-CV, TW-CP, and CV-CP differences. Error bars are drawn on each data point reflecting an RSS combination of the RMS values obtained from the linear fits to each TW, CV, and CP time series. Though the tables in each report will consist of one month of data, the graphs will be cumulative until one year of data is collected, after which the graphs will consist of a one-year moving window.

Basic hardware configurations at each site are provided at the end of the report. Because some sites may have more than one receiver/modem, a separate designation has been specified for each receiver combination. For example, the report includes 8 designations for USNO (e.g. USNO(a), USNO(b), ..., USNO(h)) where each designation corresponds to a different combination of CV, CP, and TW receivers/modems. Since each designation represents a combination of TW, CV, and CP receivers/modems, these hardware configuration tables will be somewhat redundant. For example, USNO(a) and USNO(b) differ only in the choice of CV receiver (i.e. the TW and CP hardware are the same for USNO(a) and USNO(b)).

NOTE: Currently, the following site combinations are such that CP receivers are NOT on the same reference standard as the CV and TW hardware: USNO(a), USNO(b), PTB, TUG. However, the USNO(a) and USNO(b) clock estimates are re-referenced to the same timing reference as the CV and TW hardware using an optic fiber

link. Also, CP clock estimates at PTB are referenced to the same timing reference as CV and TW data using a SRS620 time interval counter data.

## **ADJUSTMENTS TO THE DATA**

Each table contains a column marked ADJUSTMENTS which indicate any manual adjustments made to the data. For example, we currently remove arbitrary values from the non-calibrated carrier-phase systems to account for receiver resets which can occur for example when a receiver's power is cycled. In particular, first differences of the carrier-phase estimates are taken and spikes larger than 10ns (accounting for large data gaps) are flagged as outliers. Flagged values are then replaced by linearly interpolating adjacent first differences. Finally, the series of first differences is then integrated back into the time domain by choosing an initial arbitrary constant so that all CP values are 0.000 on January 1, 2000. For these carrier-phase adjustments, the ADJUSTMENTS column represents the difference between the raw and the "cleaned" CP data, and is therefore a measure of the individual jumps removed. This is clearly not the optimal method of removing such jumps since some carrier-phase systems track a 1-pps input from the local reference which can be used to re-reference the receiver's internal clock to the external reference when such resets occur. However, since we do not have available such 1-pps for most of the non-USNO sites, we have opted instead to remain consistent and remove carrier-phase jumps according to this very simplistic method.

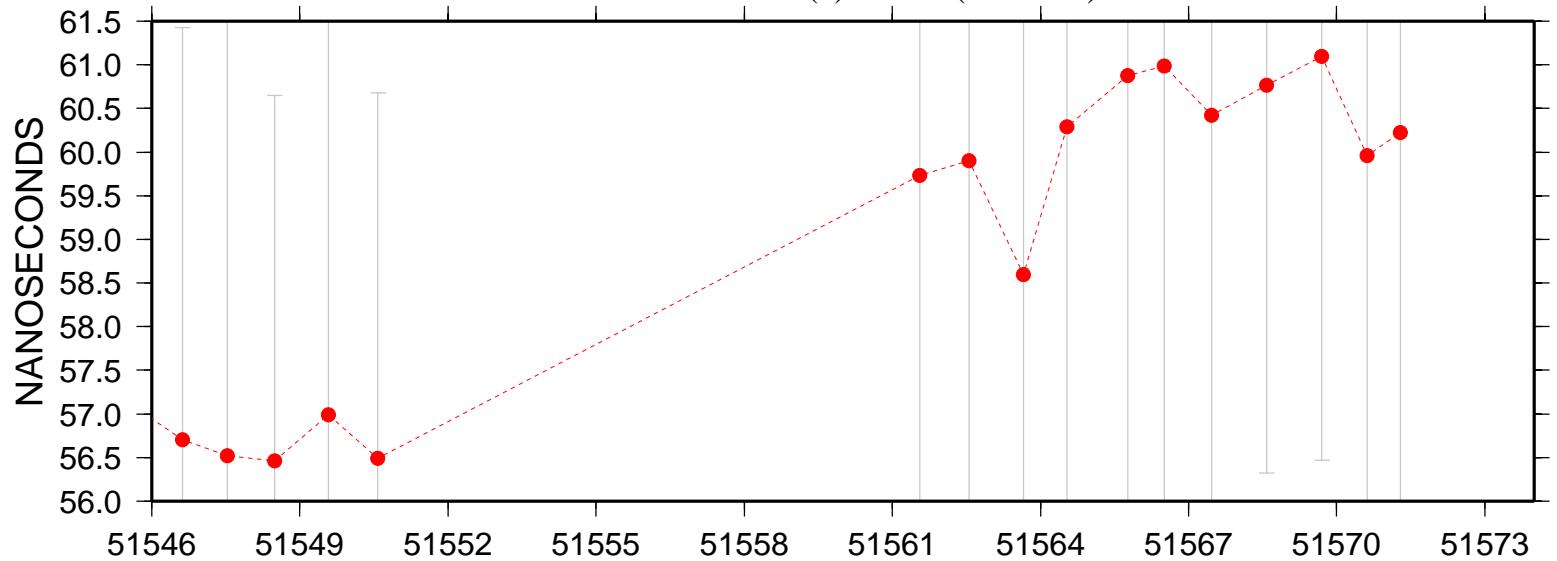
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# USNO(a) - AMC

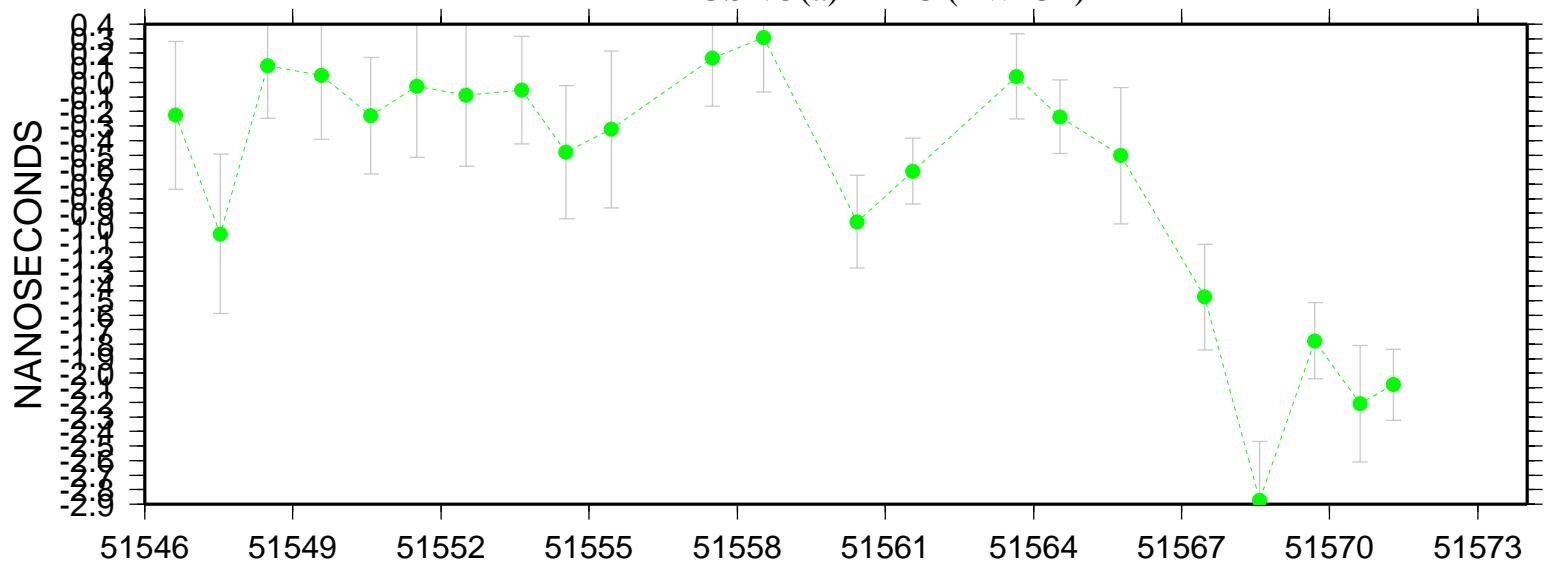
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.4927	0.3	-56.5			56.8			0.5	4.5	
51545.4928	0.5	-56.7			57.1			0.5	4.8	
51546.6177	-0.2	-56.9	0.000	+ 483.096CP	56.7	-0.2	-56.9	0.5	4.7	0.034
51547.5344	-0.6	-57.1	0.457	- 287.811CP	56.5	-1.0	-57.6	0.4	5.6	0.420
51548.4927	0.3	-56.2	0.185		56.5	0.1	-56.3	0.4	4.2	0.078
51549.5767	0.3	-56.6	0.292		57.0	0.0	-56.9	0.4	5.0	0.098
51550.5816	0.3	-56.2	0.565	- 43.805CP	56.5	-0.2	-56.7	0.4	4.2	0.127
51551.5136	0.8		0.873	- 545.260CP		0.0		0.5		0.019
51552.5132	1.0		1.065			-0.1		0.5		0.089
51553.6383	0.8		0.869			-0.1		0.3		0.162
51554.5344	1.0		1.458	- 100.403CP		-0.5		0.5		0.044
51555.4511	1.1		1.434			-0.3		0.5		0.109
51556.3684	1.1							0.5		
51557.4941	1.9		1.752	- 2350.218CP		0.2		0.3		0.024
51558.5351	1.5		1.182			0.3		0.4		0.095
51559.5563	0.4							0.3		
51560.4313	0.3		1.286	+ 95.230CP		-1.0		0.3		0.041
51561.5556	0.8	-58.9	1.406		59.7	-0.6	-60.3	0.2	5.3	0.110
51562.5552	1.3	-58.6			59.9			0.3	5.0	
51563.6601	1.5	-57.1	1.481	+ 583.568CP	58.6	0.0	-58.6	0.3	5.2	0.145
51564.5347	1.6	-58.7	1.802		60.3	-0.2	-60.5	0.2	4.6	0.067
51565.7636	1.5	-59.4	1.994		60.9	-0.5	-61.4	0.5	9.7	0.081
51566.5132	1.2	-59.7			61.0			0.4	5.5	
51567.4726	0.8	-59.6	2.314	+ 388.362CP	60.4	-1.5	-61.9	0.4	5.0	0.037
51568.5768	0.1	-60.7	2.959		60.8	-2.9	-63.6	0.4	4.4	0.168
51569.7024	-0.1	-61.2	1.652		61.1	-1.8	-62.9	0.3	4.6	0.041
51570.6177	-0.3	-60.2	1.954		60.0	-2.2	-62.2	0.4	4.9	0.076
51571.2844	0.1	-60.1	2.156		60.2	-2.1	-62.3	0.2	5.0	0.125
51572.3052	0.3	-60.0	2.495		60.3	-2.2	-62.5	Inf	5.2	0.126
51573.5000		-59.8	2.621				-62.4		5.2	0.140

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

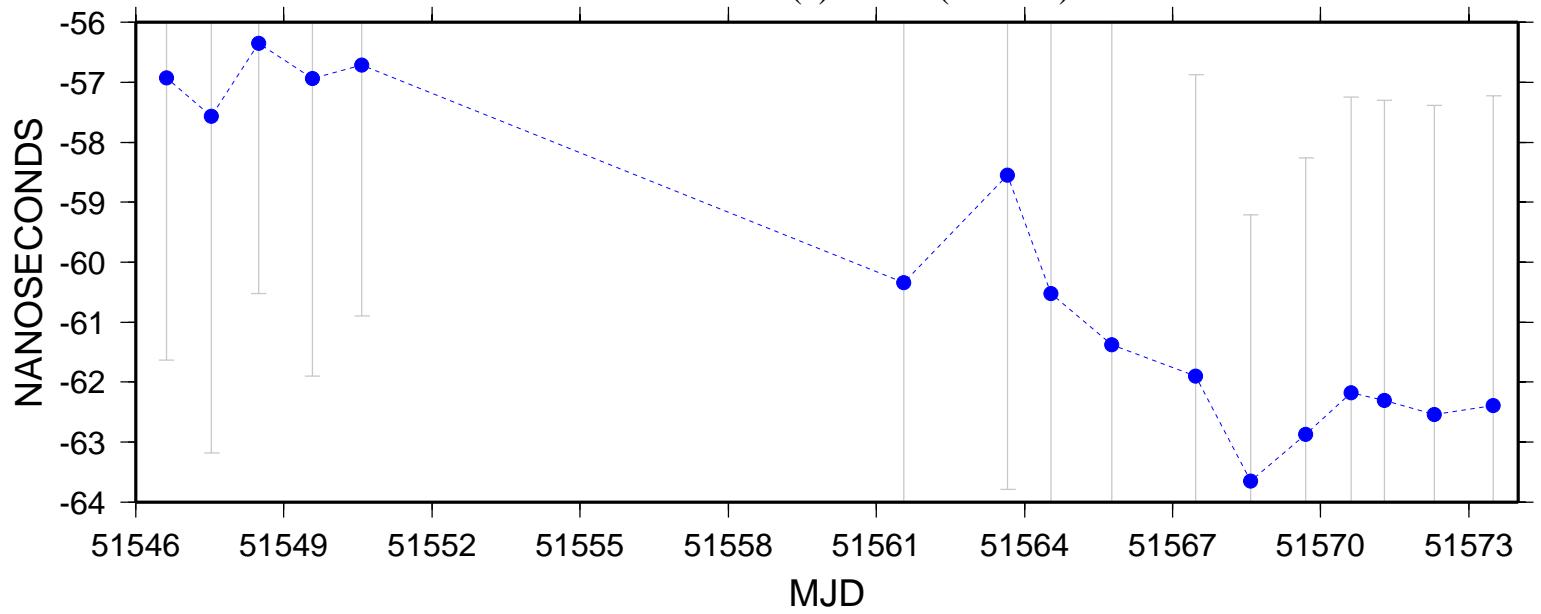
### USNO(a)-AMC (TW-CV)



### USNO(a)-AMC (TW-CP)



### USNO(a)-AMC (CV-CP)



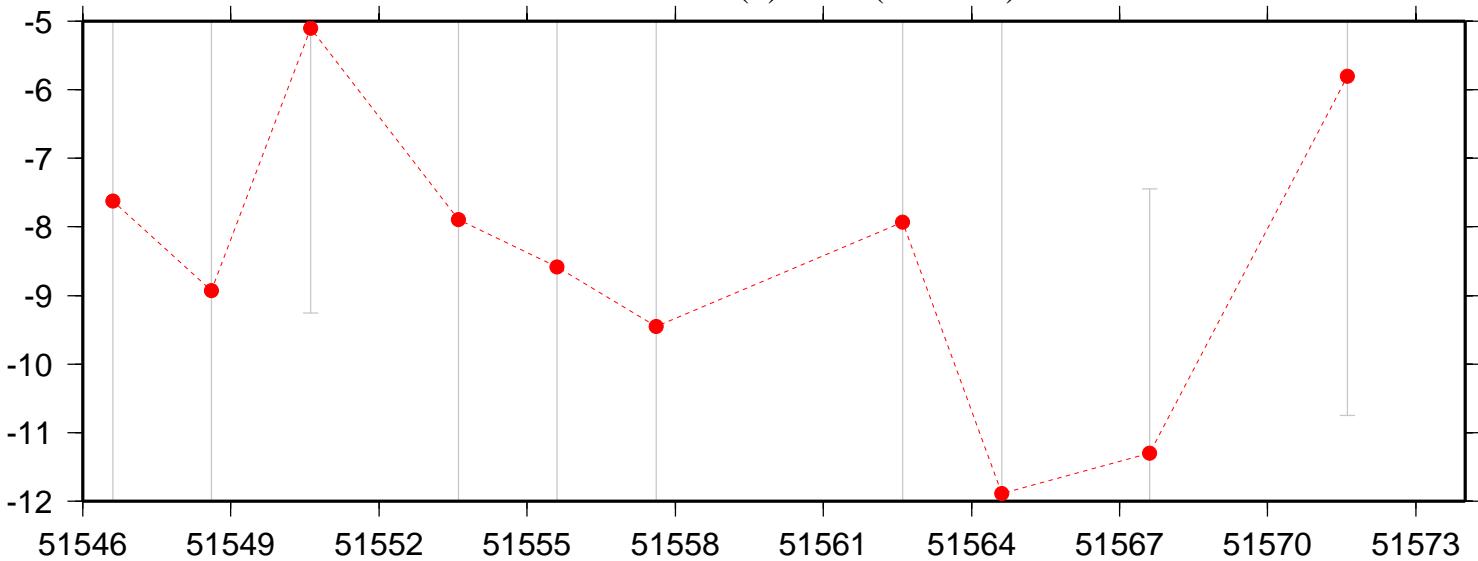
# USNO(b) - NPL

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)			
	MJD	TW	CV	CP	TW-CV	TW-CP	CV-CP	TW	CV	CP	
51544.5000		107.6								4.0	
51545.5000		104.7								4.1	
51546.6097	98.8	106.4	0.000	- 7609.043CP	-7.6	98.8	106.4	0.5	6.8	0.050	
51547.5000		105.5	-0.565	- 287.695CP			106.0		5.0	0.051	
51548.6097	98.9	107.8	-0.757		-8.9	99.6	108.6	0.4	4.5	0.236	
51549.5000		107.2	-0.531				107.7		4.9	0.139	
51550.6097	100.3	105.4	-1.114	- 43.368CP	-5.1	101.4	106.5	0.3	4.1	0.136	
51551.5000		107.3	-1.418				108.7		5.4	0.117	
51552.5000		103.6	-1.729				105.3		5.4	0.120	
51553.6097	99.7	107.6	-2.122		-7.9	101.8	109.7	0.4	5.2	0.123	
51554.5000		110.1	-1.871	- 139.780CP			112.0		6.1	0.131	
51555.6097	100.2	108.7	-1.885		-8.6	102.0	110.6	0.5	6.5	0.092	
51556.5000		105.1							6.3		
51557.6097	98.4	107.8	-2.019	- 2449.065CP	-9.4	100.4	109.9	0.3	6.2	0.034	
51558.5000		108.0	-1.651				109.7		5.4	0.190	
51559.5000		107.3							7.1		
51560.5000		109.1	-1.636	- 5.213CP			110.8		8.3	0.055	
51561.5000		106.4	-0.874				107.3		6.8	0.093	
51562.6097	99.3	107.3			-7.9			0.5	7.9		
51563.5000		110.4	-1.517	+ 482.539CP			111.9		6.9	0.191	
51564.6097	98.4	110.3	-1.064		-11.9	99.5	111.4	0.5	7.0	0.128	
51565.5000		108.3	-1.172				109.5		5.8	0.173	
51566.5000		107.1							5.9		
51567.6097	94.7	106.0	-1.779	+ 287.576CP	-11.3	96.5	107.8	0.6	3.8	0.068	
51568.5000		104.2	-2.585				106.8		6.5	0.085	
51569.5000		101.8	-3.340				105.1		4.6	0.082	
51570.5000		104.6	-3.904				108.5		5.6	0.119	
51571.6097	92.2	98.0	-4.864		-5.8	97.0	102.8	0.4	4.9	0.041	
51572.5000		98.0	-5.124				103.1		5.8	0.083	
51573.5000		98.0	-5.603				103.6		5.5	0.156	

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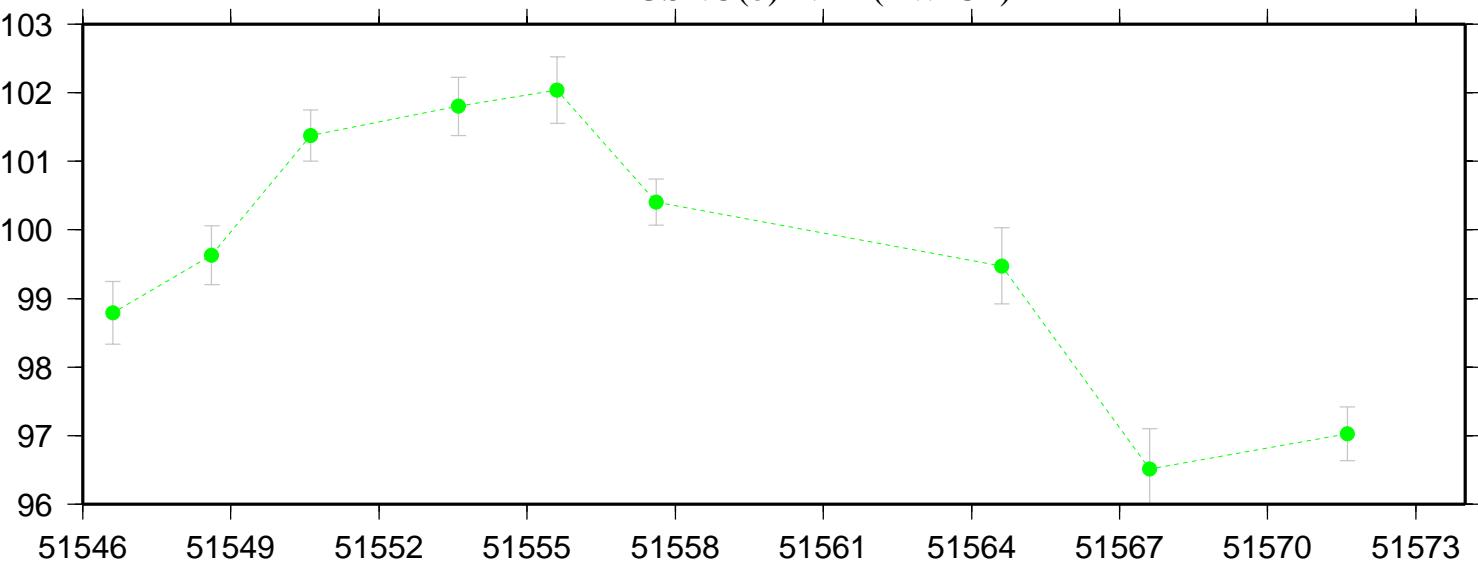
### USNO(b)-NPL (TW-CV)

NANOSECONDS



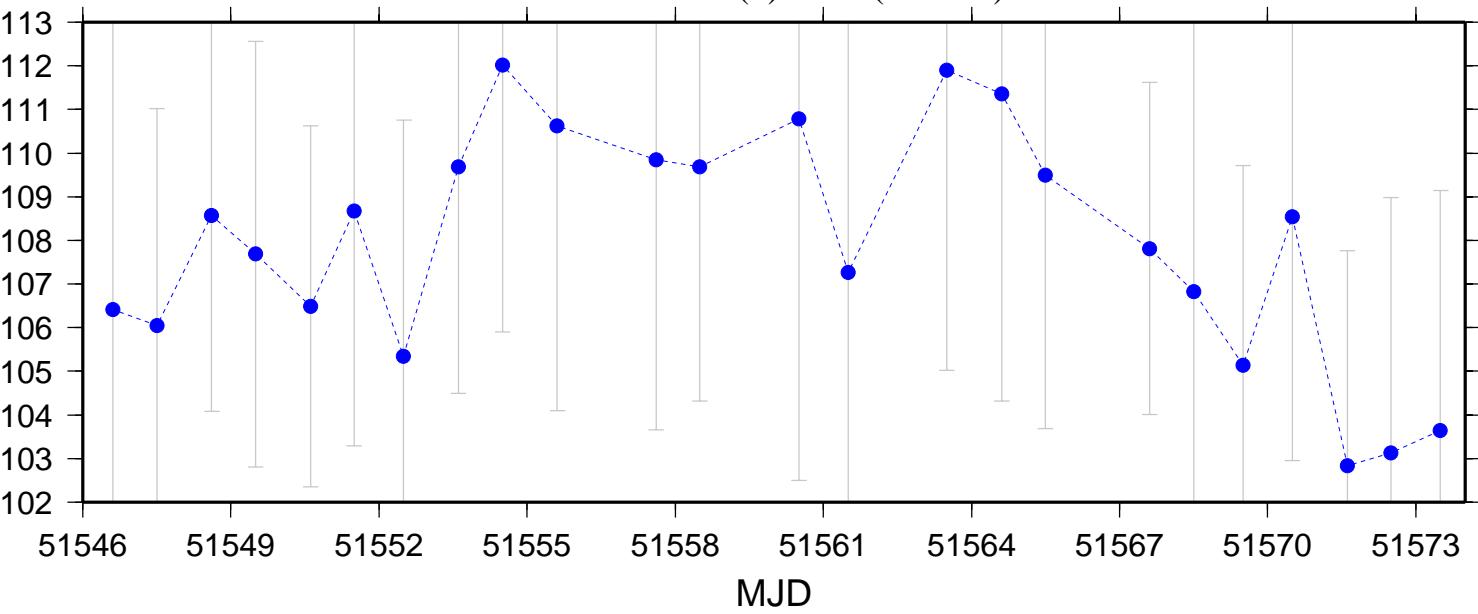
### USNO(b)-NPL (TW-CP)

NANOSECONDS



### USNO(b)-NPL (CV-CP)

NANOSECONDS



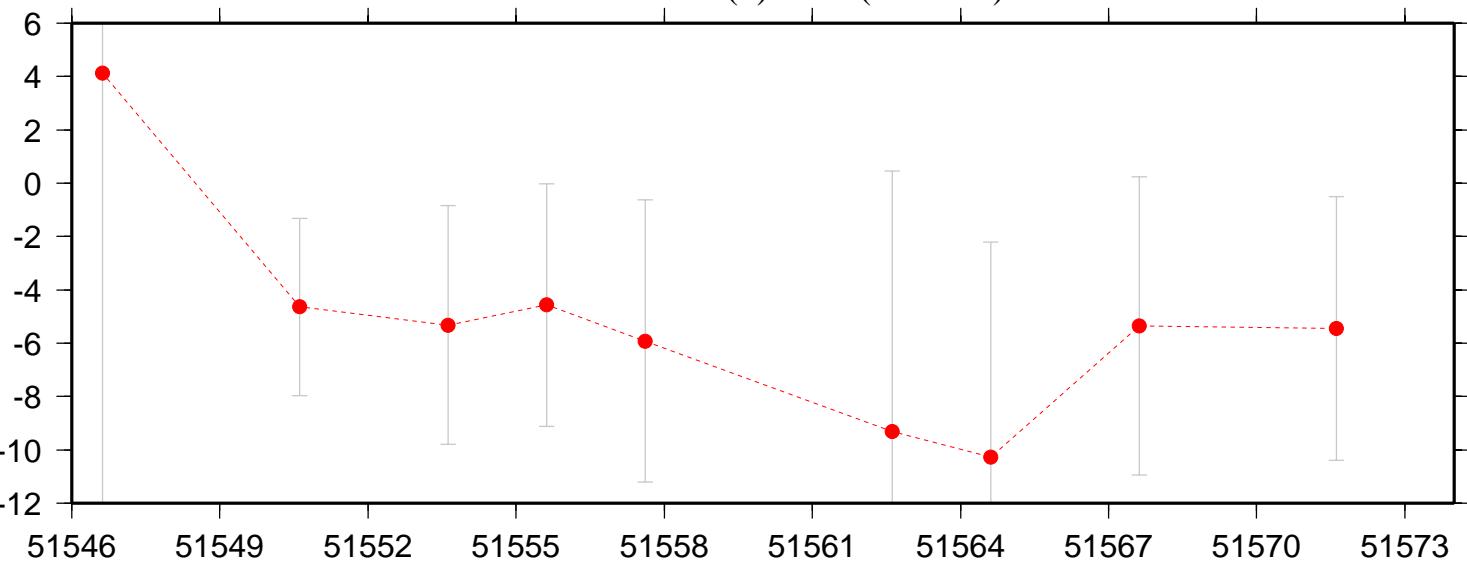
# USNO(b) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-26.1							4.3	
51545.5000		-27.1							3.1	
51546.6160	-23.4	-27.5	0.000	+ 1021.501 <sub>CP</sub>	4.1	-23.4	-27.5	0.7	34.7	0.158
51547.5000		-16.9	0.313	- 286.823 <sub>CP</sub>			-17.2		4.3	0.112
51548.5000		-15.4	3.060				-18.4		3.4	0.236
51549.5000		-11.3	2.979				-14.3		4.8	0.319
51550.6160	-17.1	-12.4	3.977	- 42.675 <sub>CP</sub>	-4.6	-21.1	-16.4	0.6	3.3	0.316
51551.5000		-11.2	3.639				-14.8		3.9	0.287
51552.5000		-13.1	4.195				-17.3		5.7	0.264
51553.6160	-14.9	-9.6	5.304		-5.3	-20.2	-14.9	0.7	4.4	0.211
51554.5000		-5.2	5.157	- 139.109 <sub>CP</sub>			-10.4		5.1	0.213
51555.6160	-13.7	-9.2	5.540		-4.6	-19.3	-14.7	0.5	4.5	0.396
51556.5000		-10.7							5.6	
51557.6160	-14.2	-8.3	8.480	- 2443.272 <sub>CP</sub>	-5.9	-22.7	-16.7	0.4	5.3	0.149
51558.5000		-10.8	9.635				-20.4		5.7	0.203
51559.5000		-10.6							5.2	
51560.5000		-7.5	12.808	+ 3.834 <sub>CP</sub>			-20.3		7.6	0.151
51561.5000		-6.8	13.856				-20.6		8.0	0.280
51562.6160	-15.3	-6.0			-9.3			0.7	9.8	
51563.5000		-4.3	17.642	+ 493.409 <sub>CP</sub>			-21.9		6.0	0.247
51564.6160	-12.8	-2.5	20.317		-10.3	-33.1	-22.8	0.7	8.0	0.407
51565.5000		-2.8	20.378				-23.2		3.6	0.366
51566.5000		-6.3							5.1	
51567.6160	-11.1	-5.8	22.533	+ 297.970 <sub>CP</sub>	-5.4	-33.7	-28.3	0.6	5.6	0.111
51568.5000		-3.4	22.518				-25.9		5.5	0.271
51569.5000		-3.5	25.308				-28.8		3.4	0.300
51570.5000		0.6	29.266				-28.7		4.0	0.406
51571.6160	-1.7	3.8	31.622		-5.4	-33.3	-27.8	0.4	4.9	0.337
51572.5000		6.1	32.824				-26.7		5.0	0.189
51573.5000		7.1	34.629				-27.5		3.9	0.270

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

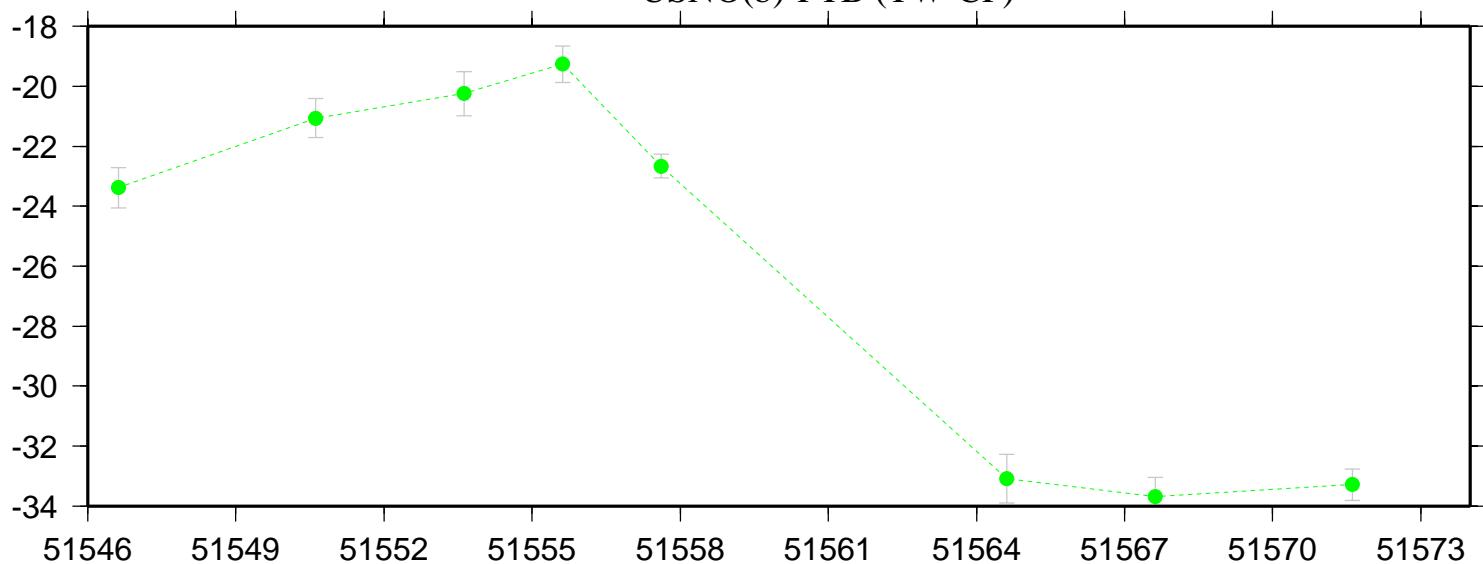
### USNO(b)-PTB (TW-CV)

NANOSECONDS



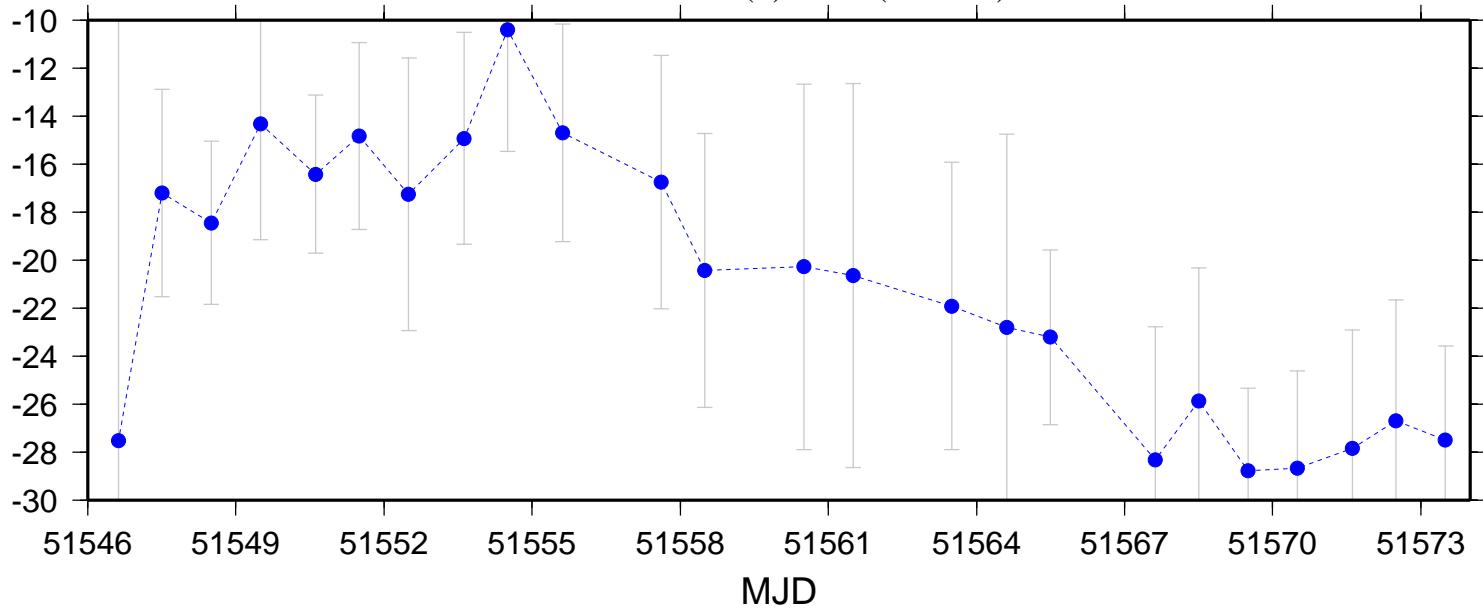
### USNO(b)-PTB (TW-CP)

NANOSECONDS



### USNO(b)-PTB (CV-CP)

NANOSECONDS

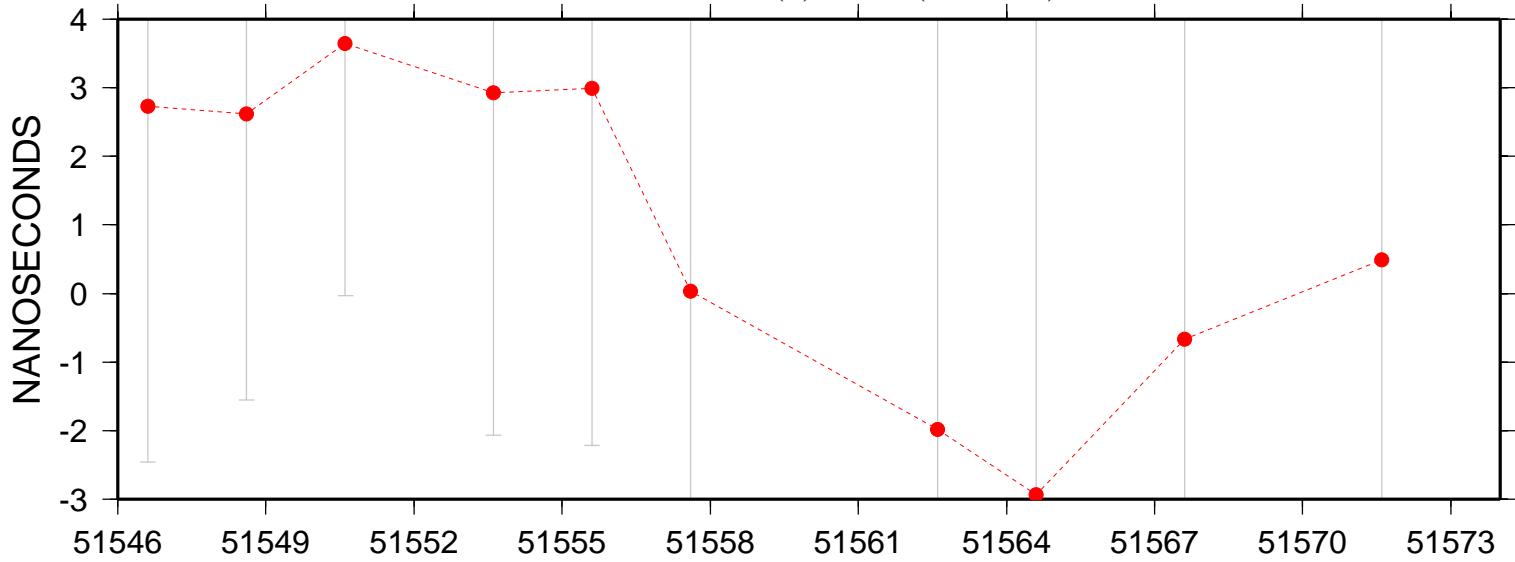


# USNO(b) - TUG

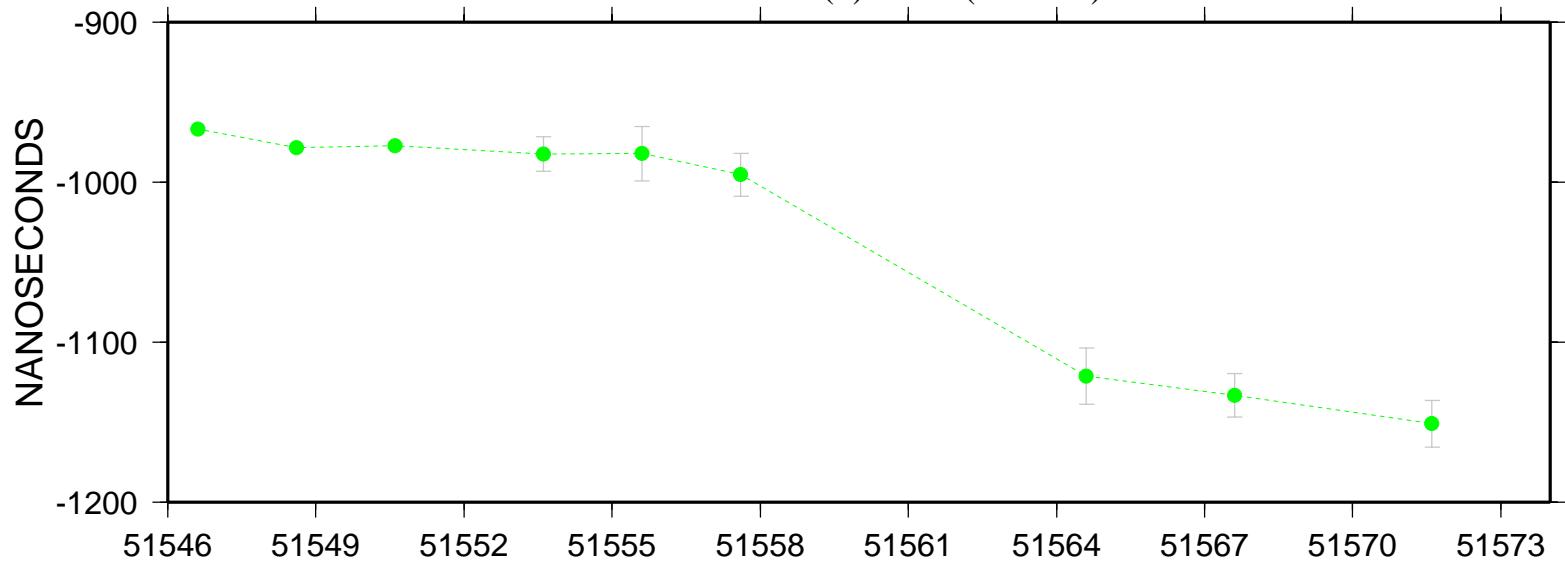
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-960.4							4.8	
51545.5000		-965.9							3.9	
51546.6076	-966.9	-969.6	0.003	+ 269.309CP	2.7	-966.9	-969.6	0.7	5.1	0.439
51547.5000		-976.0	5.661	- 274.977CP			-981.7		5.2	0.275
51548.6076	-979.2	-981.8	-0.857		2.6	-978.3	-980.9	0.6	4.1	0.830
51549.5000		-987.5	-7.146				-980.3		5.6	0.593
51550.6076	-990.1	-993.7	-13.063	- 30.902CP	3.6	-977.0	-980.6	0.6	3.6	0.574
51551.5000		-994.6	-13.641				-981.0		4.1	0.749
51552.5000		-998.0	-15.099				-982.9		6.3	0.742
51553.6076	-994.5	-997.4	-12.040	- 143.328CP	2.9	-982.5	-985.4	0.8	4.9	10.883
51554.5000		-998.5	-4.148	- 444.918CP			-994.3		5.9	15.588
51555.6076	-999.7	-1002.7	-17.569		3.0	-982.2	-985.1	0.6	5.2	17.036
51556.5000		-1003.3							6.2	
51557.6076	-1006.5	-1006.5	-11.075	- 2943.677CP	0.0	-995.4	-995.4	0.7	6.2	13.516
51558.5000		-1008.5	-8.194				-1000.4		5.5	16.005
51559.5000		-1012.1							5.7	
51560.5000		-1012.5	20.565	- 495.727CP			-1033.1		9.2	13.722
51561.5000		-1014.1	34.258	+ 226.992CP			-1048.3		8.5	27.528
51562.6081	-1015.1	-1013.2			-2.0			0.7	9.9	
51563.5000		-1018.1	68.358	+ 1669.009CP			-1086.5		6.6	16.069
51564.6076	-1024.3	-1021.3	97.010		-2.9	-1121.3	-1118.3	0.9	8.4	17.600
51565.5000		-1022.2	99.697				-1121.9		3.2	15.076
51566.5000		-1026.3							5.1	
51567.6076	-1027.5	-1026.8	105.551	+ 1485.635CP	-0.7	-1133.0	-1132.4	0.7	6.0	13.592
51568.5000		-1027.6	107.537				-1135.1		4.5	14.538
51569.5000		-1034.7	107.974				-1142.7		3.4	14.350
51570.5000		-1036.5	114.843				-1151.4		4.8	13.860
51571.6076	-1040.6	-1041.1	110.271		0.5	-1150.8	-1151.3	0.5	4.5	14.612
51572.5000		-1042.2	107.560				-1149.7		5.9	15.198
51573.5000		-1043.6	114.386				-1158.0		4.3	13.787

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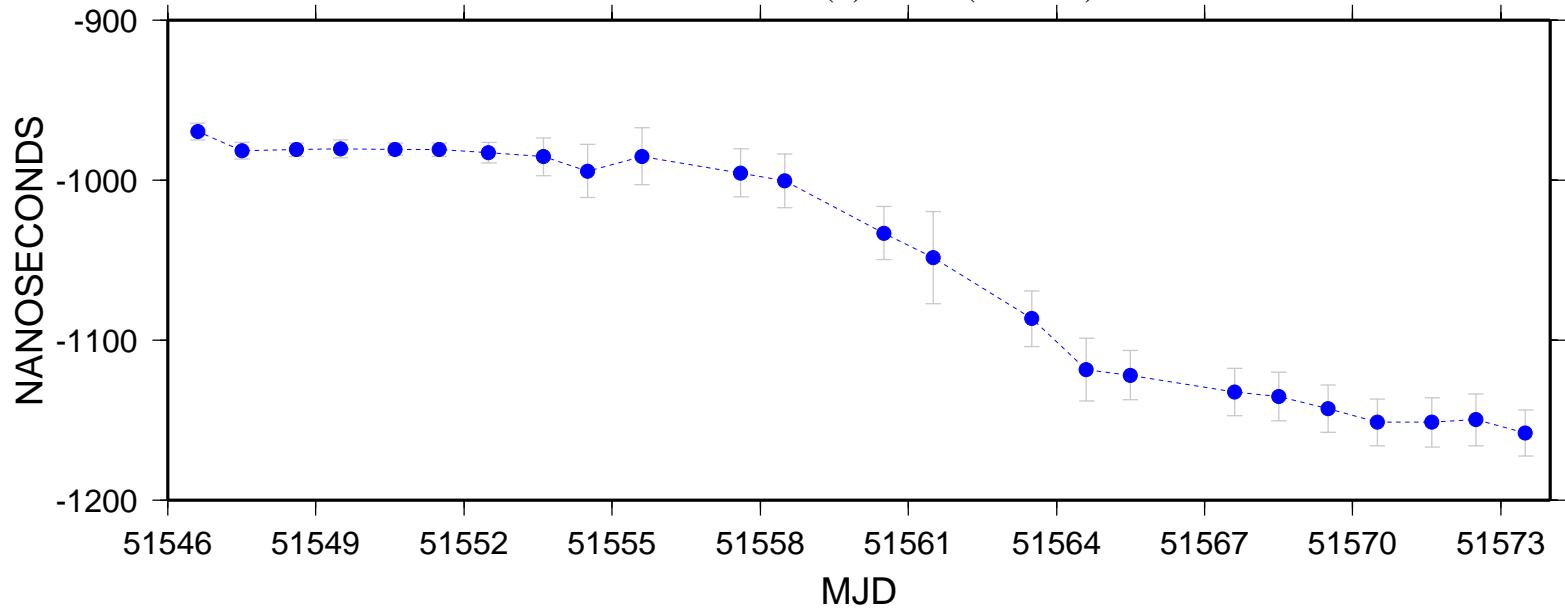
### USNO(b)-TUG (TW-CV)



### USNO(b)-TUG (TW-CP)



### USNO(b)-TUG (CV-CP)

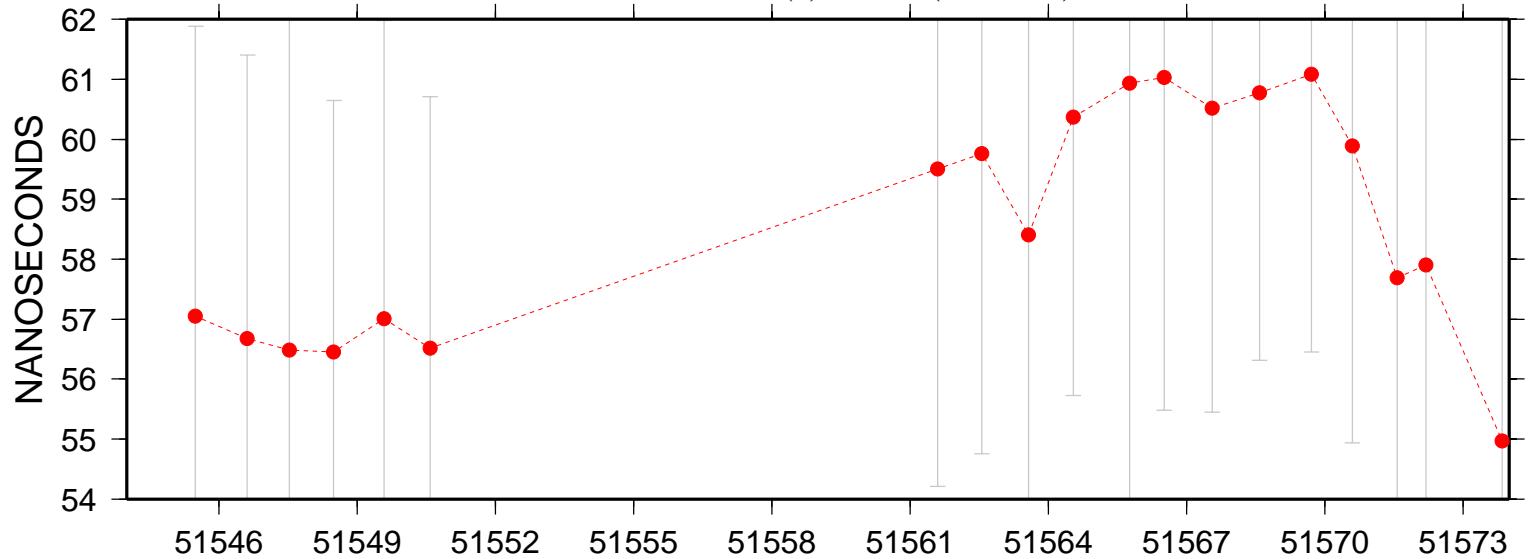


# USNO(c) - AMC

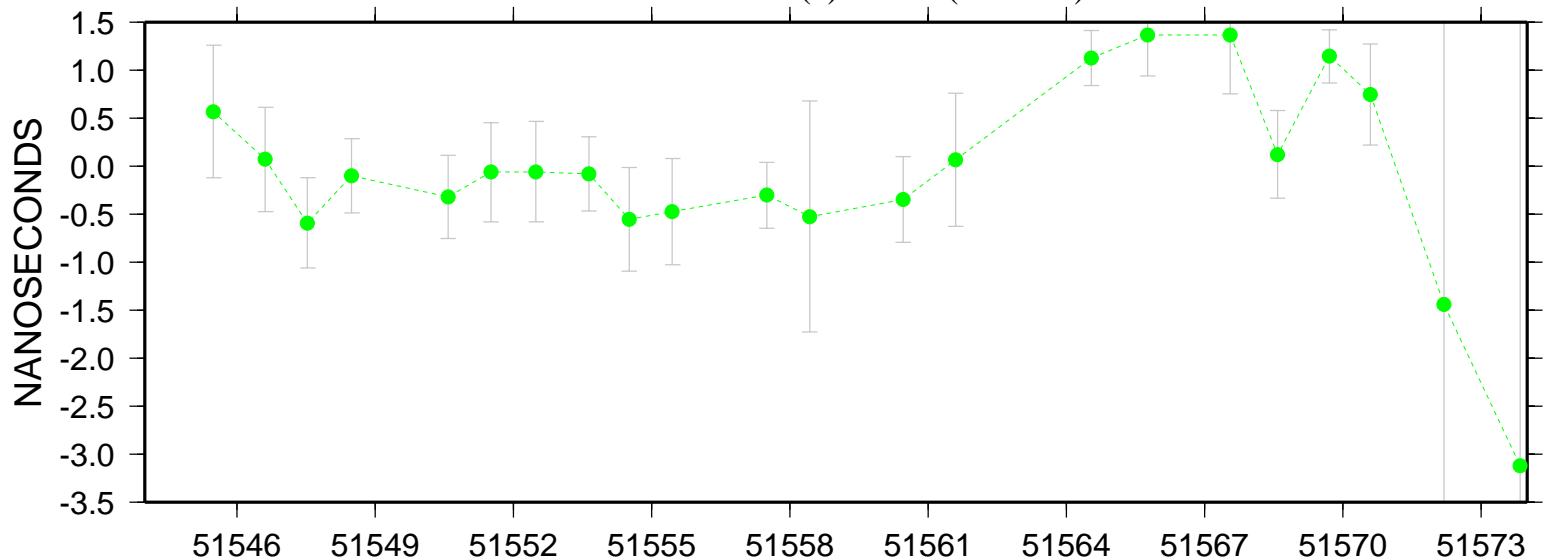
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-56.4	0.000	- 430.843CP			-56.4		4.5	0.064
51545.4927	0.4	-56.7	-0.171		57.0	0.6	-56.5	0.7	4.8	0.097
51546.6177	-0.3	-56.9	-0.325		56.7	0.1	-56.6	0.5	4.7	0.042
51547.5344	-0.6	-57.1	-0.033		56.5	-0.6	-57.1	0.4	5.6	0.237
51548.4927	0.3	-56.2	0.391		56.5	-0.1	-56.6	0.4	4.2	0.138
51549.5767	0.4	-56.6			57.0			0.4	5.0	
51550.5816	0.4	-56.2	0.677		56.5	-0.3	-56.8	0.4	4.2	0.122
51551.5136	0.9		0.957	- 928.647CP		-0.1		0.5		0.068
51552.4920	1.0		1.018			-0.1		0.5		0.041
51553.6383	0.8		0.918			-0.1		0.3		0.183
51554.5139	0.9		1.489	+ 98.469CP		-0.6		0.5		0.023
51555.4511	1.2		1.644			-0.5		0.5		0.097
51556.4094	1.1							0.6		
51557.4941	2.0		2.316			-0.3		0.3		0.083
51558.4309	1.3		1.859			-0.5		1.2		0.069
51559.4941	0.3							0.5		
51560.4531	0.3		0.625			-0.3		0.4		0.053
51561.5986	0.6	-58.9	0.527		59.5	0.1	-59.4	0.7	5.3	0.095
51562.5552	1.1	-58.6			59.8			0.7	5.0	
51563.5761	1.3	-57.1			58.4			0.8	5.2	
51564.5347	1.6	-58.7	0.519		60.4	1.1	-59.2	0.3	4.6	0.059
51565.7636	1.5	-59.4	0.178		60.9	1.4	-59.6	0.4	9.7	0.061
51566.5132	1.3	-59.7			61.0			0.4	5.5	
51567.5559	0.8	-59.7	-0.599		60.5	1.4	-59.2	0.6	5.0	0.049
51568.5768	0.1	-60.7	-0.036		60.8	0.1	-60.6	0.4	4.4	0.265
51569.7024	-0.1	-61.2	-1.285		61.1	1.1	-59.9	0.3	4.6	0.038
51570.5969	-0.3	-60.2	-1.079		59.9	0.7	-59.1	0.5	4.9	0.044
51571.5761	-2.6	-60.3			57.7			6.7	5.0	
51572.1906	-1.9	-59.8	-0.486		57.9	-1.4	-59.3	7.7	5.2	0.101
51573.8420	-4.0	-58.9	-0.844		55.0	-3.1	-58.1	9.1	5.2	0.139

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

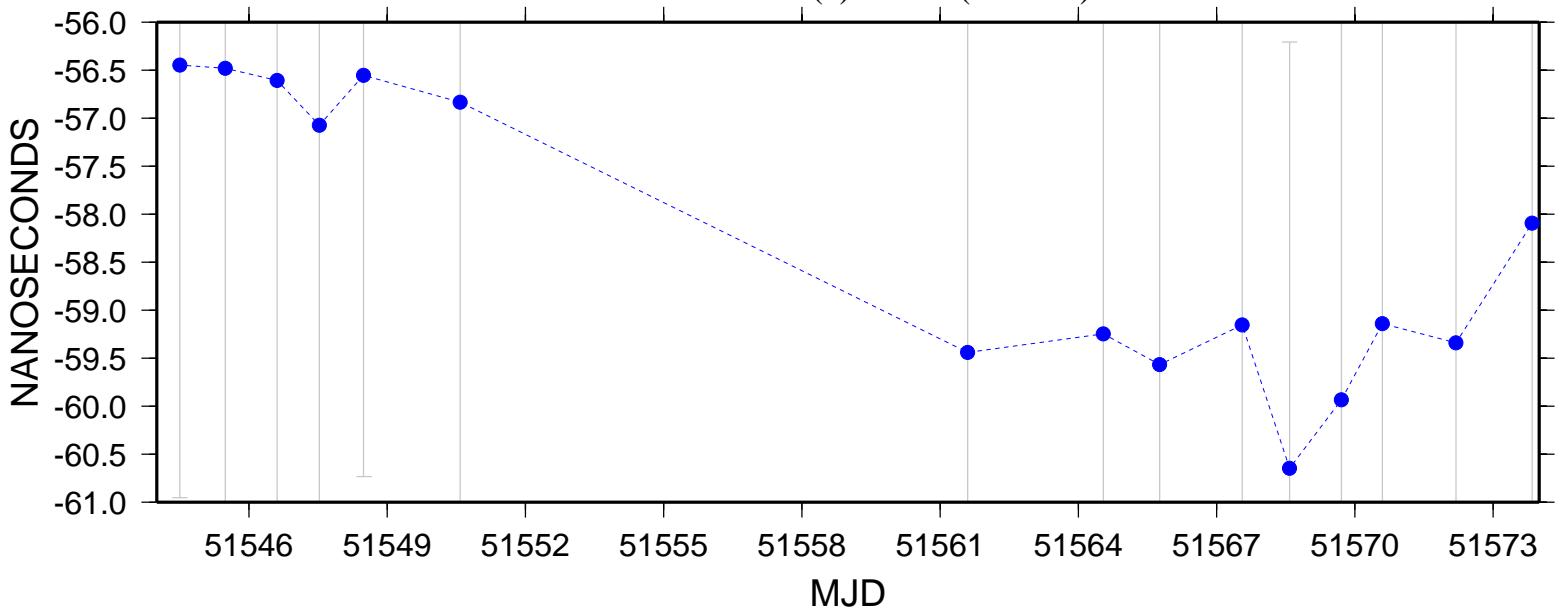
### USNO(c)-AMC (TW-CV)



### USNO(c)-AMC (TW-CP)



### USNO(c)-AMC (CV-CP)



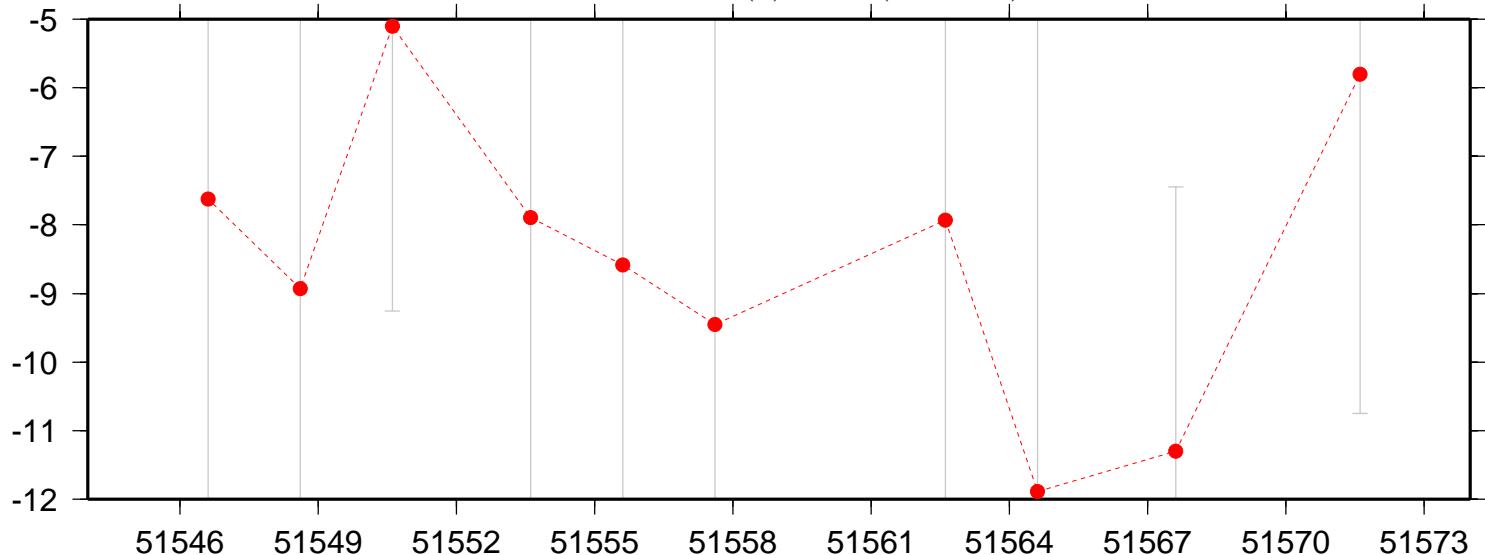
# USNO(d) - NPL

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		107.6	0.000	- 8524.076CP			107.6		4.0	0.043
51545.5000		104.7	-0.719				105.4		4.1	0.088
51546.6097	98.8	106.4	-1.426		-7.6	100.2	107.8	0.5	6.8	0.071
51547.5000		105.5	-1.785				107.3		5.0	0.083
51548.6097	98.9	107.8	-1.747		-8.9	100.6	109.6	0.4	4.5	0.190
51549.5000		107.2							4.9	
51550.6097	100.3	105.4	-2.112		-5.1	102.4	107.5	0.3	4.1	0.106
51551.5000		107.3	-2.127				109.4		5.4	0.116
51552.5000		103.6	-2.513				106.1		5.4	0.097
51553.6097	99.7	107.6	-2.796		-7.9	102.5	110.4	0.4	5.2	0.134
51554.5000		110.1	-2.513				112.7		6.1	0.072
51555.6097	100.2	108.7	-2.432		-8.6	102.6	111.2	0.5	6.5	0.069
51556.5000		105.1							6.3	
51557.6097	98.4	107.8	-1.861		-9.4	100.2	109.7	0.3	6.2	0.064
51558.5000		108.0	-1.763				109.8		5.4	0.167
51559.5000		107.3							7.1	
51560.5000		109.1	-1.266				110.4		8.3	0.049
51561.5000		106.4	-0.875				107.3		6.8	0.083
51562.6097	99.3	107.3			-7.9			0.5	7.9	
51563.5000		110.4							6.9	
51564.6097	98.4	110.3	-0.875		-11.9	99.3	111.2	0.5	7.0	0.114
51565.5000		108.3	-1.284				109.6		5.8	0.150
51566.5000		107.1							5.9	
51567.6097	94.7	106.0	-3.422		-11.3	98.2	109.5	0.6	3.8	0.087
51568.5000		104.2	-4.206				108.5		6.5	0.076
51569.5000		101.8	-5.001				106.8		4.6	0.074
51570.5000		104.6	-5.730				110.4		5.6	0.074
51571.6097	92.2	98.0			-5.8			0.4	4.9	
51572.5000		98.0	-7.004				105.0		5.8	0.054
51573.5000		98.0	-7.887				105.9		5.5	0.164

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

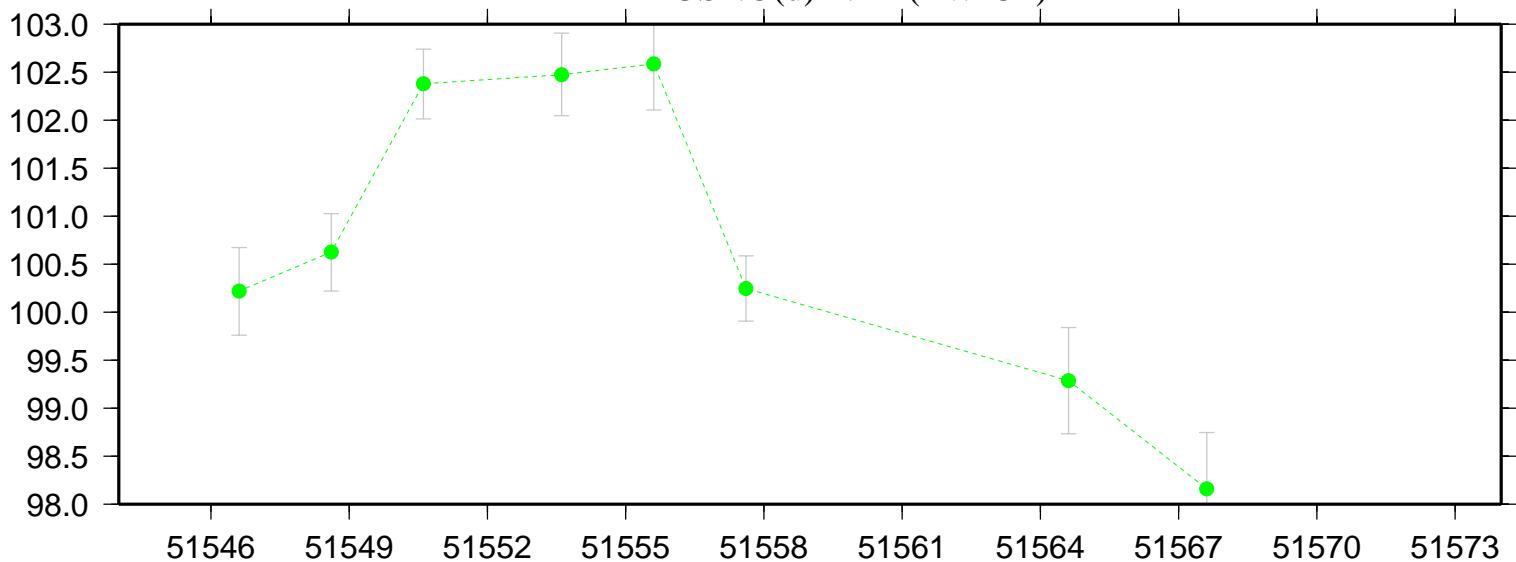
### USNO(d)-NPL (TW-CV)

NANOSECONDS



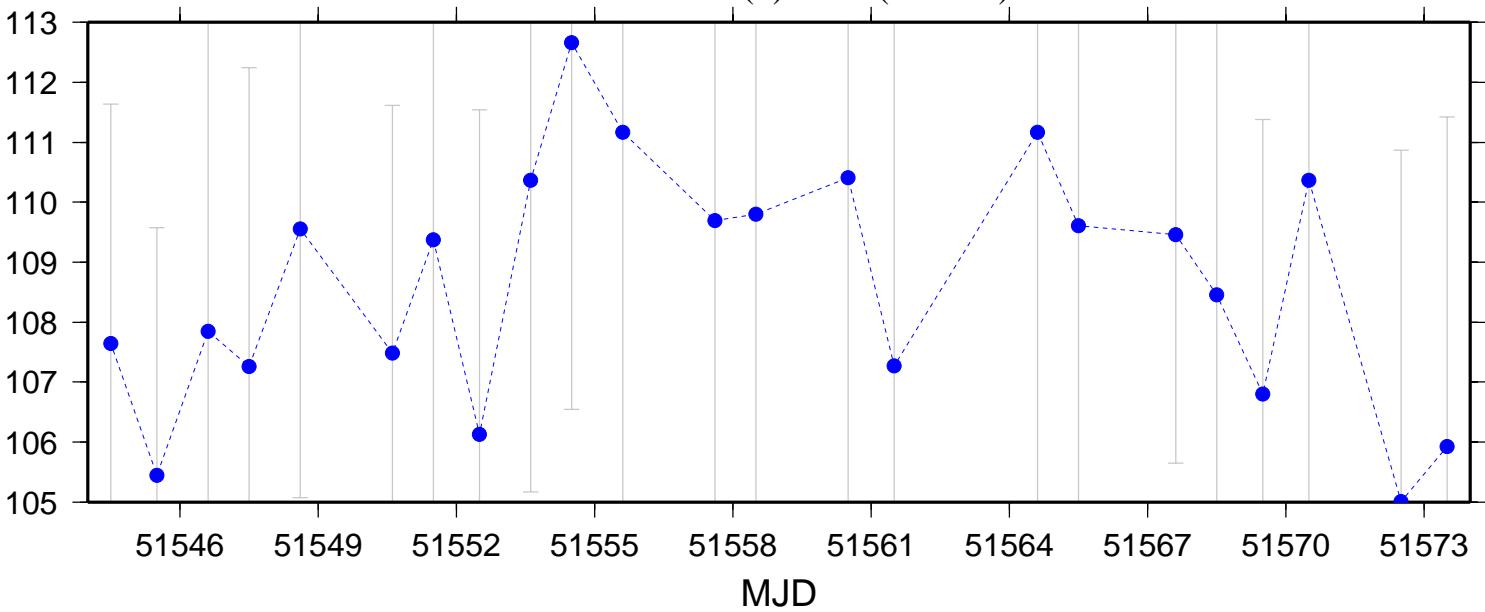
### USNO(d)-NPL (TW-CP)

NANOSECONDS



### USNO(d)-NPL (CV-CP)

NANOSECONDS



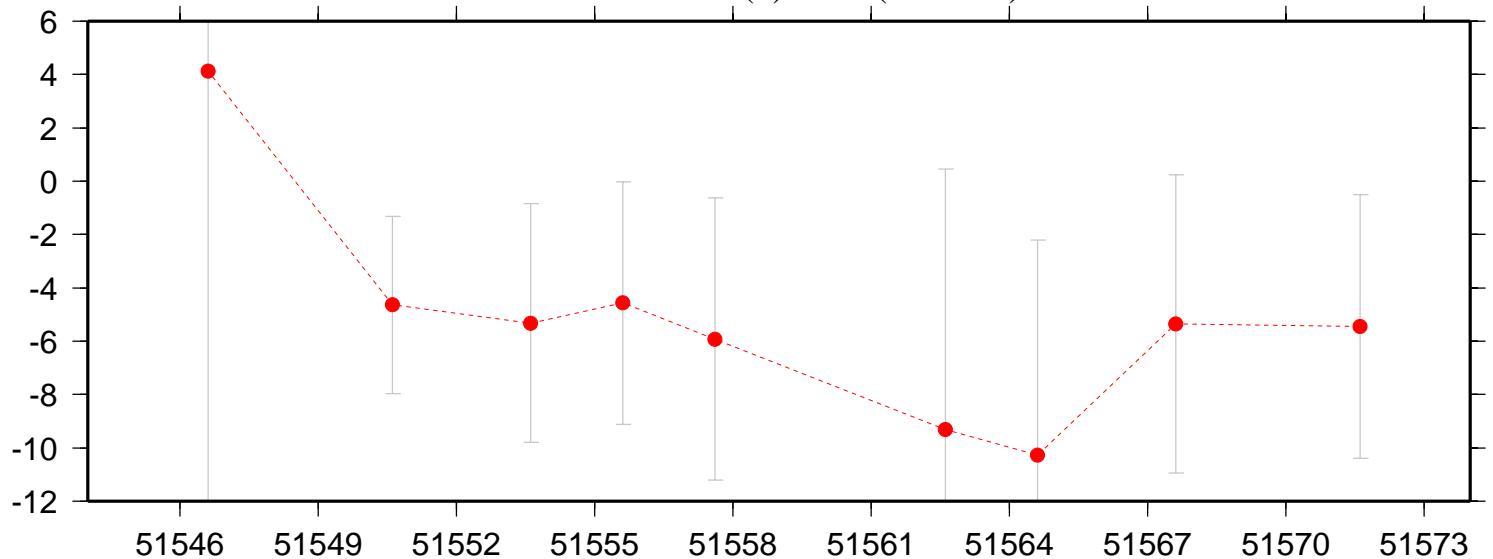
# USNO(d) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-26.1	0.000	+ 117.519CP			-26.1		4.3	0.275
51545.5000		-27.1	-0.298				-26.8		3.1	20.148
51546.6160	-23.4	-27.5	9.169		4.1	-32.5	-36.7	0.7	34.7	0.410
51547.5000		-16.9	10.454				-27.3		4.3	0.372
51548.5000		-15.4	12.236				-27.6		3.4	0.262
51549.5000		-11.3							4.8	
51550.6160	-17.1	-12.4	13.337		-4.6	-30.4	-25.8	0.6	3.3	0.280
51551.5000		-11.2	13.287				-24.5		3.9	0.271
51552.5000		-13.1	13.768				-26.8		5.7	0.327
51553.6160	-14.9	-9.6	14.985		-5.3	-29.9	-24.6	0.7	4.4	0.189
51554.5000		-5.2	14.894				-20.1		5.1	0.226
51555.6160	-13.7	-9.2	15.372		-4.6	-29.1	-24.5	0.5	4.5	0.377
51556.5000		-10.7							5.6	
51557.6160	-14.2	-8.3	14.607		-5.9	-28.8	-22.9	0.4	5.3	0.253
51558.5000		-10.8	14.781				-25.6		5.7	0.186
51559.5000		-10.6							5.2	
51560.5000		-7.5	15.193				-22.7		7.6	0.192
51561.5000		-6.8	15.859				-22.6		8.0	0.283
51562.6160	-15.3	-6.0			-9.3			0.7	9.8	
51563.5000		-4.3							6.0	
51564.6160	-12.8	-2.5	20.686		-10.3	-33.4	-23.2	0.7	8.0	0.391
51565.5000		-2.8	20.448				-23.3		3.6	0.354
51566.5000		-6.3							5.1	
51567.6160	-11.1	-5.8	21.561		-5.4	-32.7	-27.3	0.6	5.6	0.216
51568.5000		-3.4	21.554				-24.9		5.5	0.268
51569.5000		-3.5	24.304				-27.8		3.4	0.292
51570.5000		0.6	28.098				-27.5		4.0	0.403
51571.6160	-1.7	3.8			-5.4			0.4	4.9	
51572.5000		6.1	31.601				-25.5		5.0	0.189
51573.5000		7.1	33.002				-25.9		3.9	0.265

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

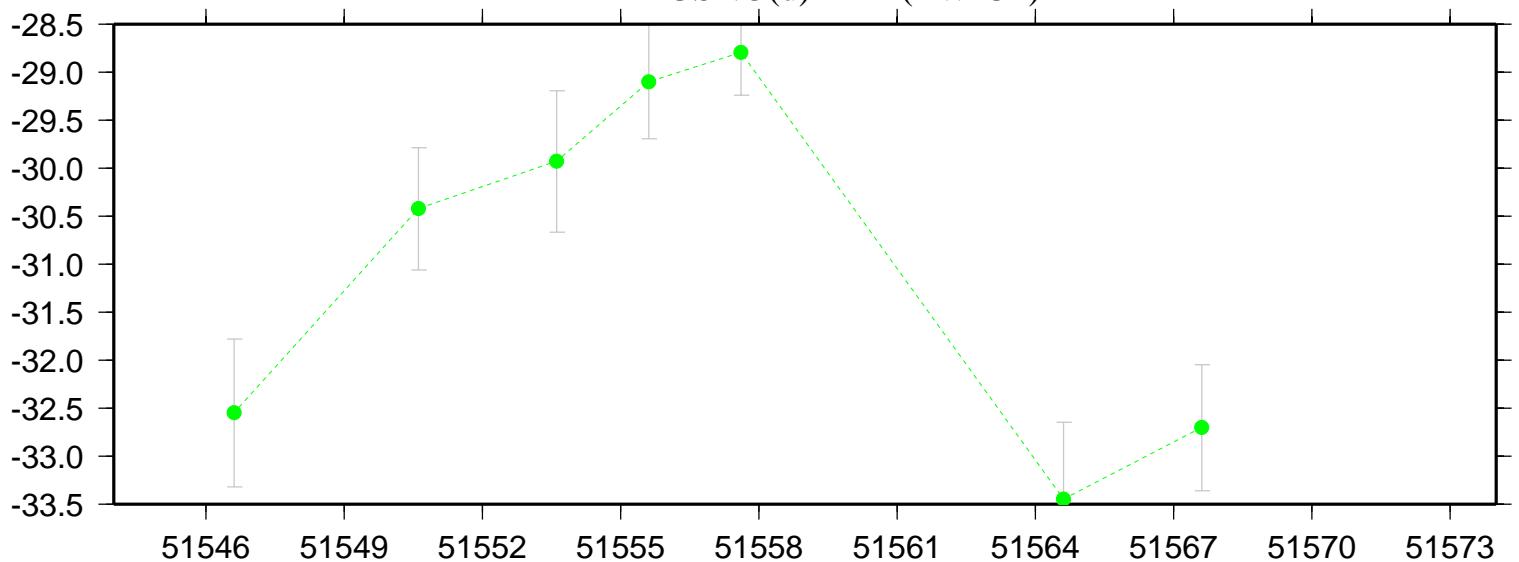
USNO(d)-PTB (TW-CV)

NANOSECONDS



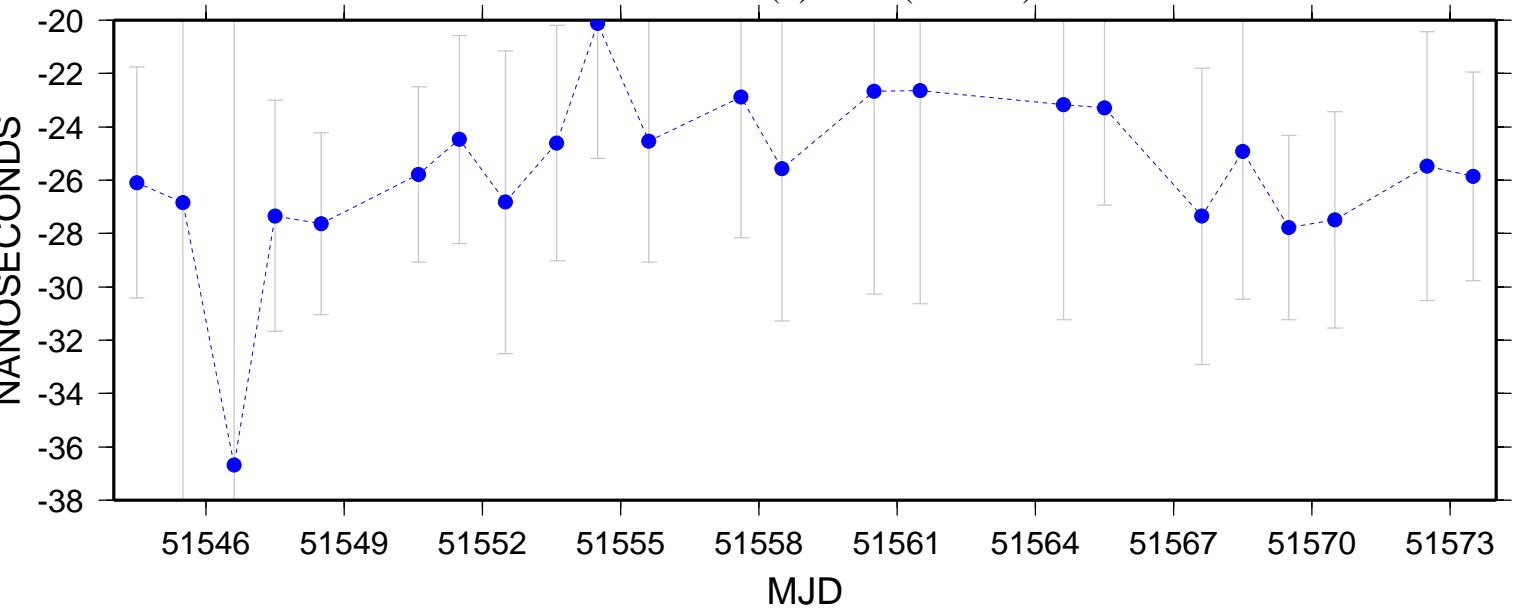
USNO(d)-PTB (TW-CP)

NANOSECONDS



USNO(d)-PTB (CV-CP)

NANOSECONDS

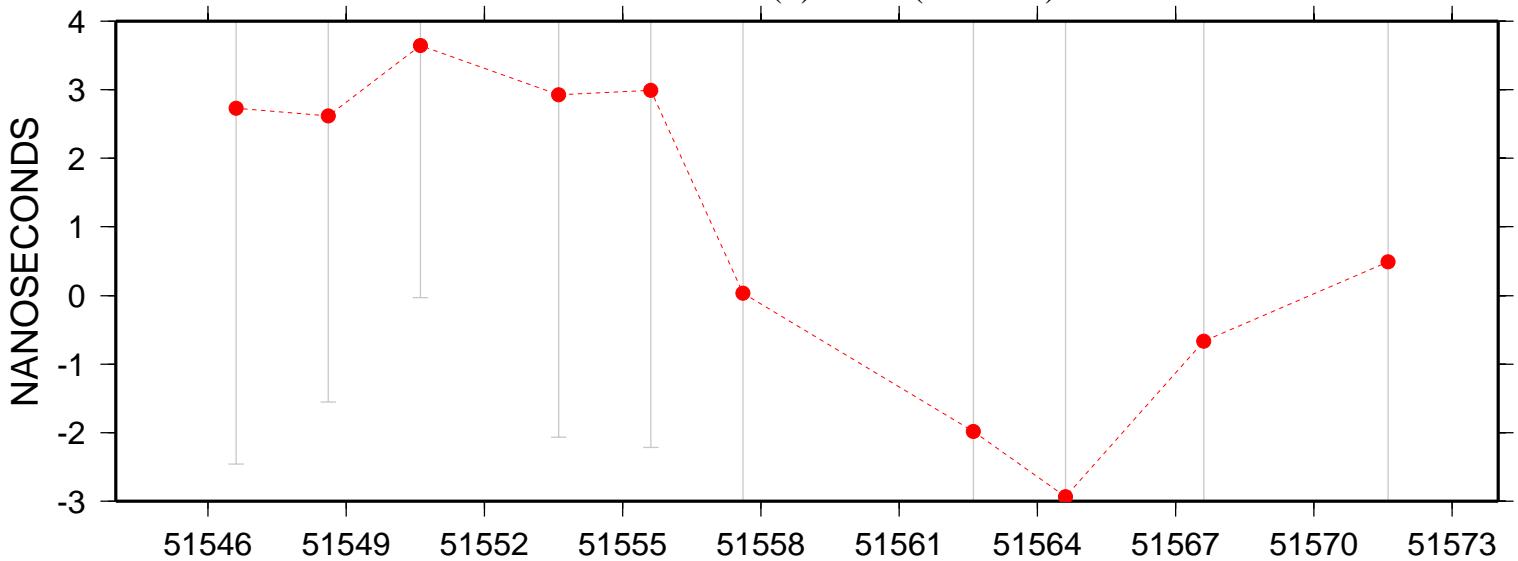


# USNO(d) - TUG

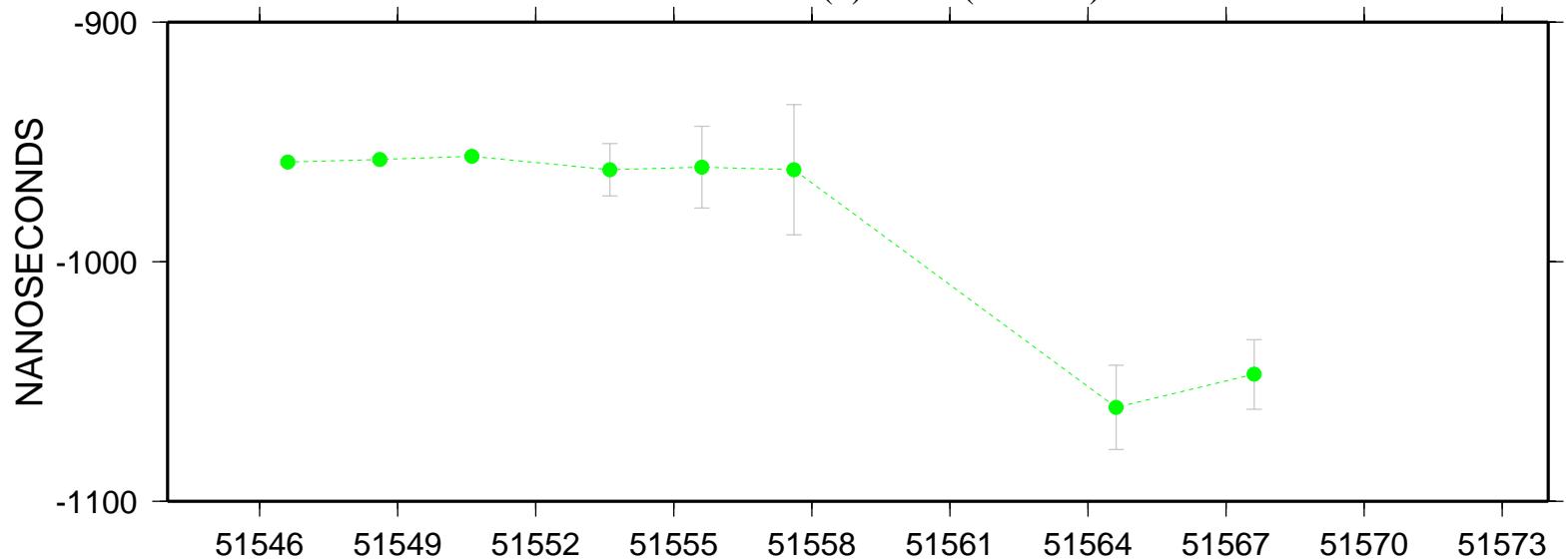
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-960.4	0.000	- 653.033CP			-960.4		4.8	0.402
51545.5000		-965.9	-3.098				-962.8		3.9	0.741
51546.6076	-966.9	-969.6	-8.526		2.7	-958.4	-961.1	0.7	5.1	0.738
51547.5000		-976.0	-15.117				-960.9		5.2	0.374
51548.6076	-979.2	-981.8	-21.872		2.6	-957.3	-959.9	0.6	4.1	0.897
51549.5000		-987.5							5.6	
51550.6076	-990.1	-993.7	-34.115		3.6	-956.0	-959.6	0.6	3.6	0.582
51551.5000		-994.6	-34.405				-960.2		4.1	0.778
51552.5000		-998.0	-35.939				-962.0		6.3	0.803
51553.6076	-994.5	-997.4	-32.784	- 112.686CP	2.9	-961.7	-964.6	0.8	4.9	10.915
51554.5000		-998.5	-25.781	- 318.851CP			-972.7		5.9	15.535
51555.6076	-999.7	-1002.7	-39.239		3.0	-960.5	-963.5	0.6	5.2	17.017
51556.5000		-1003.3							6.2	
51557.6076	-1006.5	-1006.5	-44.878	- 527.691CP	0.0	-961.6	-961.6	0.7	6.2	27.224
51558.5000		-1008.5	-48.607				-959.9		5.5	15.949
51559.5000		-1012.1							5.7	
51560.5000		-1012.5	-36.155	- 522.490CP			-976.3		9.2	16.379
51561.5000		-1014.1	-5.160	+ 198.236CP			-1008.9		8.5	27.523
51562.6081	-1015.1	-1013.2			-2.0			0.7	9.9	
51563.5000		-1018.1							6.6	
51564.6076	-1024.3	-1021.3	36.549	+ 1133.138CP	-2.9	-1060.8	-1057.9	0.9	8.4	17.638
51565.5000		-1022.2	38.929				-1061.1		3.2	15.121
51566.5000		-1026.3							5.1	
51567.6076	-1027.5	-1026.8	19.530	+ 1117.261CP	-0.7	-1047.0	-1046.3	0.7	6.0	14.482
51568.5000		-1027.6	18.032				-1045.6		4.5	14.423
51569.5000		-1034.7	18.216				-1052.9		3.4	14.374
51570.5000		-1036.5	24.954				-1061.5		4.8	13.871
51571.6076	-1040.6	-1041.1			0.5			0.5	4.5	
51572.5000		-1042.2	56.040	+ 1155.664CP			-1098.2		5.9	15.200
51573.5000		-1043.6	62.442				-1106.1		4.3	13.773

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

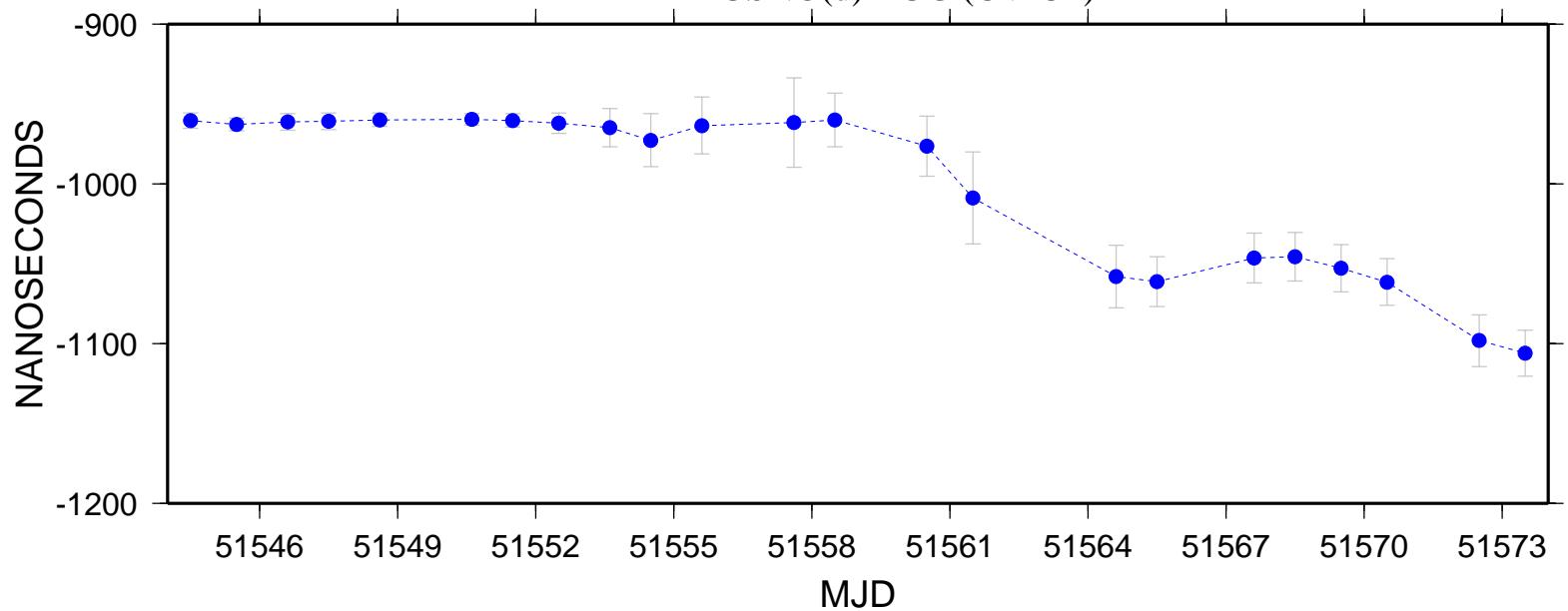
### USNO(d)-TUG (TW-CV)



### USNO(d)-TUG (TW-CP)



### USNO(d)-TUG (CV-CP)

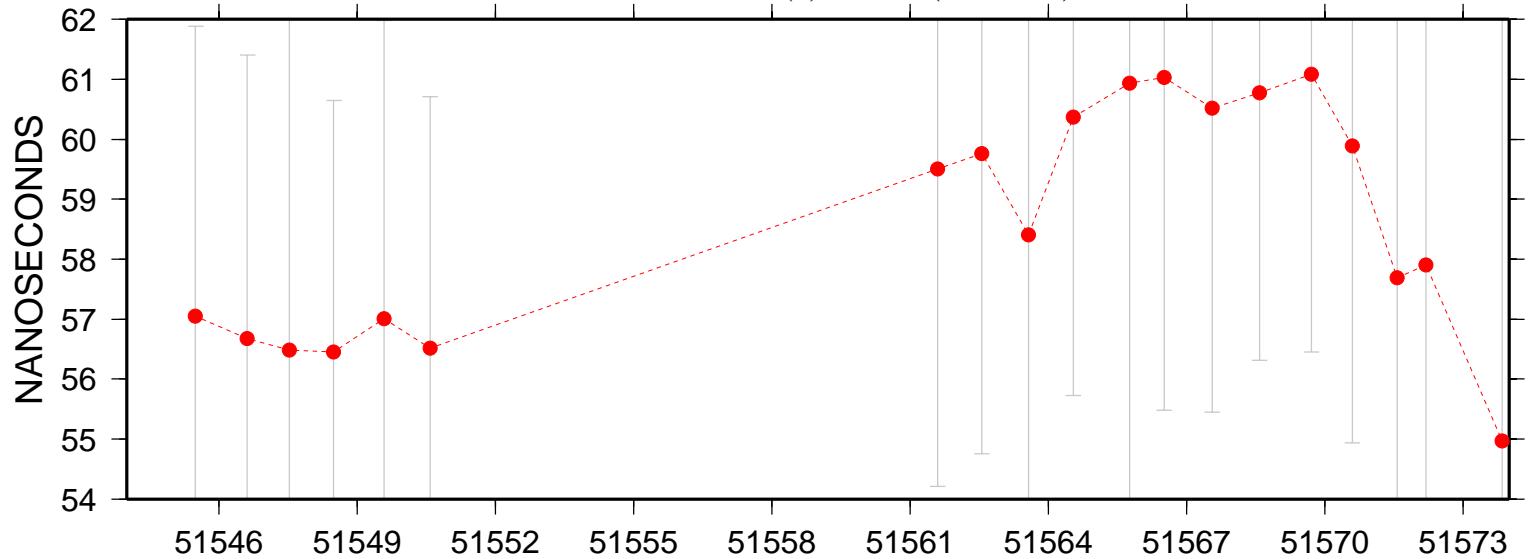


# USNO(e) - AMC

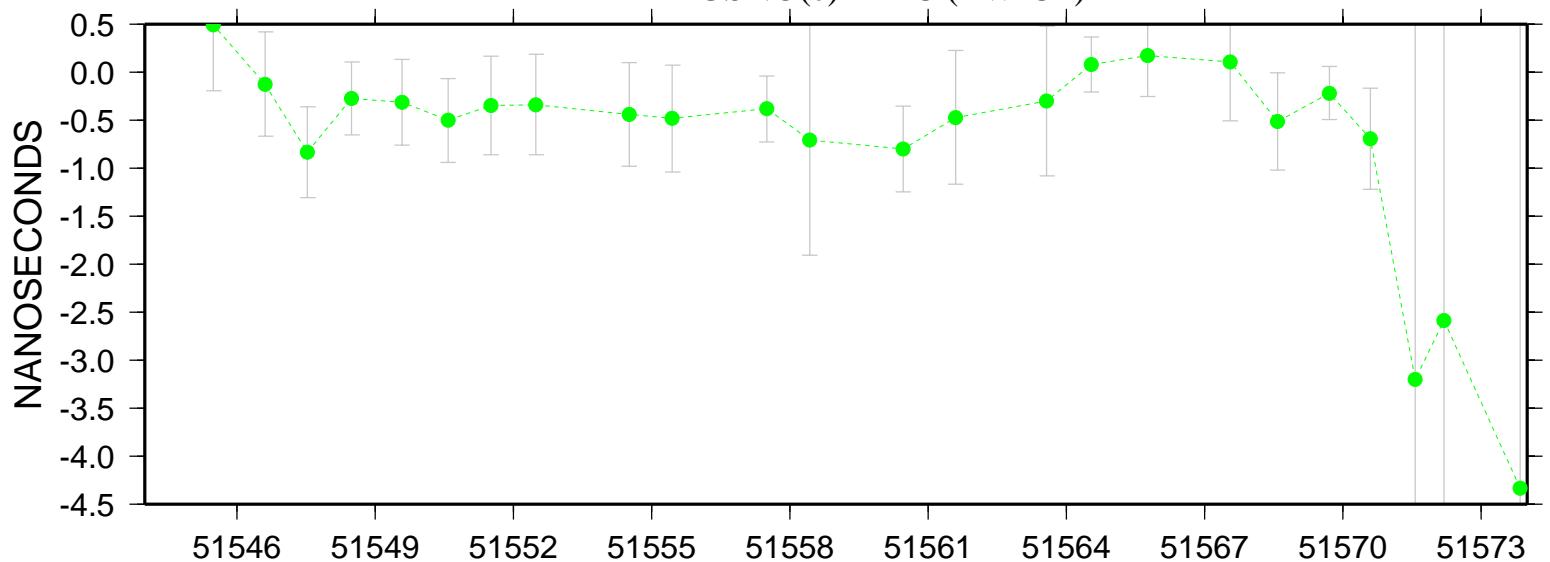
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-56.4	0.000	- 653497.361CP			-56.4		4.5	0.064
51545.4927	0.4	-56.7	-0.094		57.0	0.5	-56.6	0.7	4.8	0.088
51546.6177	-0.3	-56.9	-0.129		56.7	-0.1	-56.8	0.5	4.7	0.042
51547.5344	-0.6	-57.1	0.211		56.5	-0.8	-57.3	0.4	5.6	0.246
51548.4927	0.3	-56.2	0.562		56.5	-0.3	-56.7	0.4	4.2	0.120
51549.5767	0.4	-56.6	0.675		57.0	-0.3	-57.3	0.4	5.0	0.104
51550.5816	0.4	-56.2	0.859		56.5	-0.5	-57.0	0.4	4.2	0.132
51551.5136	0.9		1.244	- 502.153CP		-0.3		0.5		0.062
51552.4920	1.0		1.299			-0.3		0.5		0.040
51553.6383	0.8							0.3		
51554.5139	0.9		1.374	+ 28.510CP		-0.4		0.5		0.043
51555.4511	1.2		1.653			-0.5		0.5		0.091
51556.4094	1.1							0.6		
51557.4941	2.0		2.397			-0.4		0.3		0.082
51558.4309	1.3		2.040			-0.7		1.2		0.070
51559.4941	0.3							0.5		
51560.4531	0.3		1.077			-0.8		0.4		0.046
51561.5986	0.6	-58.9	1.066		59.5	-0.5	-60.0	0.7	5.3	0.099
51562.5552	1.1	-58.6			59.8			0.7	5.0	
51563.5761	1.3	-57.1	1.598		58.4	-0.3	-58.7	0.8	5.2	0.049
51564.5347	1.6	-58.7	1.564		60.4	0.1	-60.3	0.3	4.6	0.068
51565.7636	1.5	-59.4	1.367		60.9	0.2	-60.8	0.4	9.7	0.067
51566.5132	1.3	-59.7			61.0			0.4	5.5	
51567.5559	0.8	-59.7	0.660		60.5	0.1	-60.4	0.6	5.0	0.048
51568.5768	0.1	-60.7	0.599		60.8	-0.5	-61.3	0.4	4.4	0.345
51569.7024	-0.1	-61.2	0.076		61.1	-0.2	-61.3	0.3	4.6	0.040
51570.5969	-0.3	-60.2	0.361		59.9	-0.7	-60.6	0.5	4.9	0.047
51571.5761	-2.6	-60.3	0.620		57.7	-3.2	-60.9	6.7	5.0	0.114
51572.1906	-1.9	-59.8	0.664		57.9	-2.6	-60.5	7.7	5.2	0.104
51573.8420	-4.0	-58.9	0.369		55.0	-4.3	-59.3	9.1	5.2	0.127

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

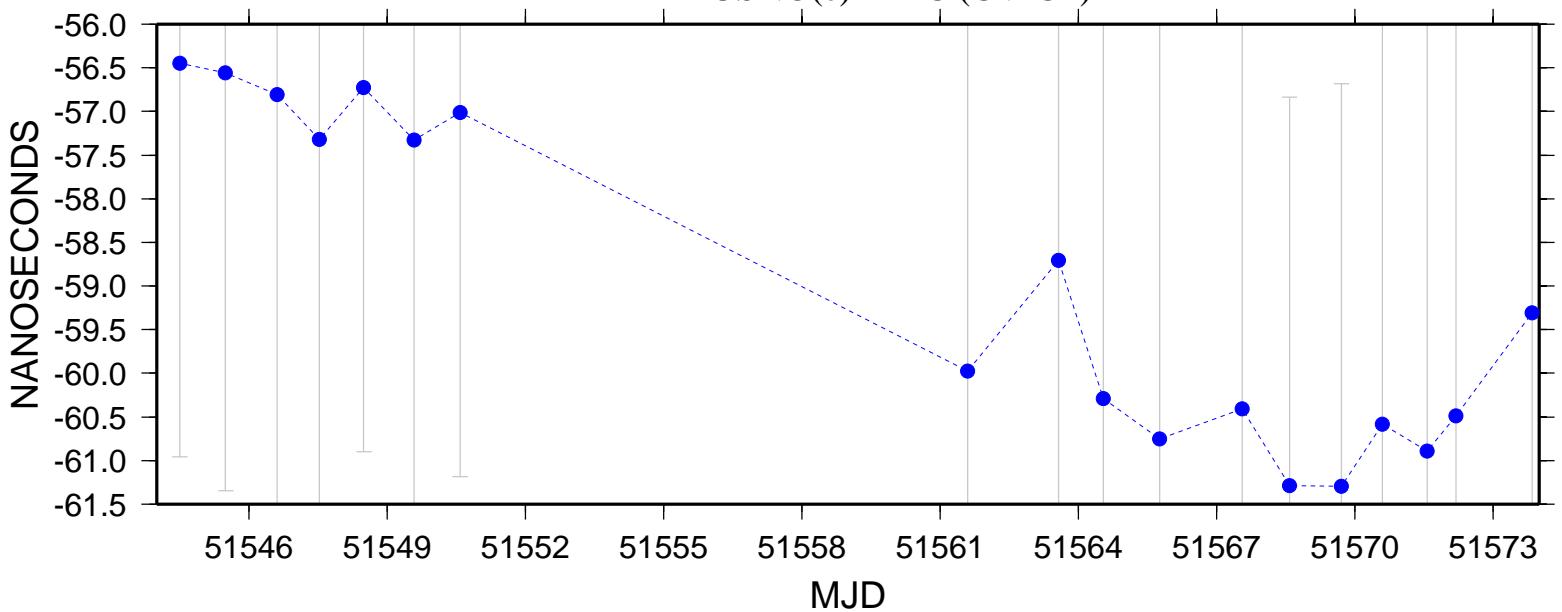
### USNO(e)-AMC (TW-CV)



### USNO(e)-AMC (TW-CP)



### USNO(e)-AMC (CV-CP)

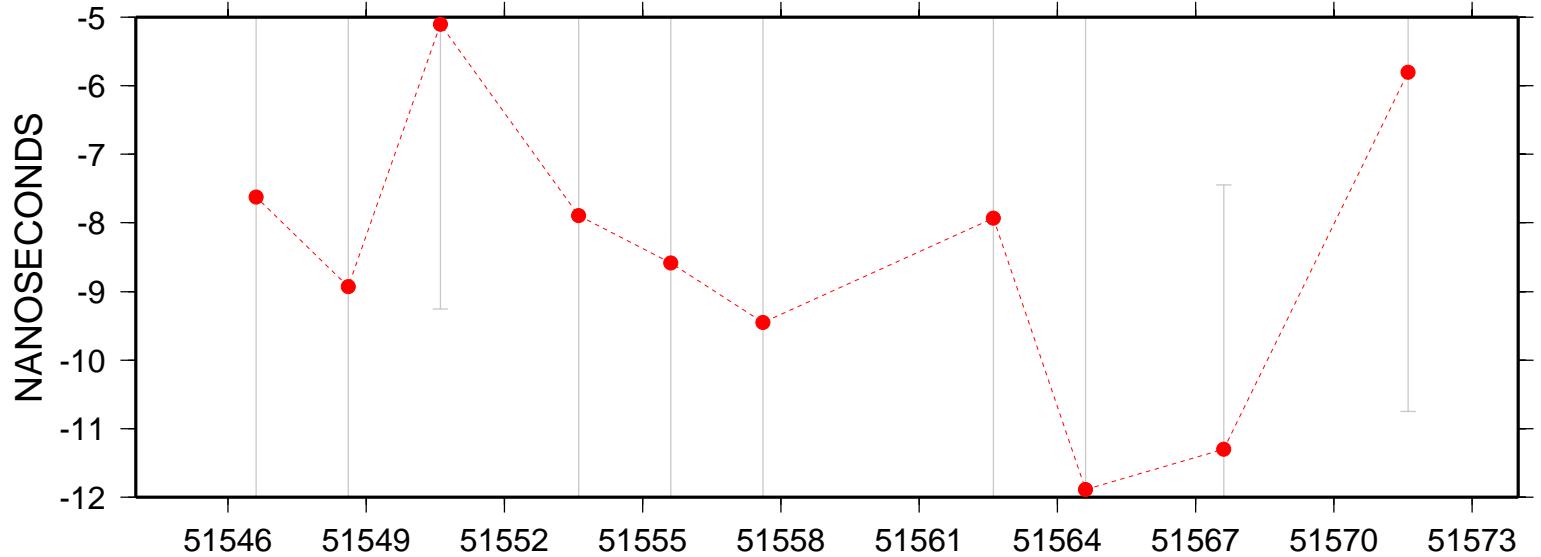


# USNO(f) - NPL

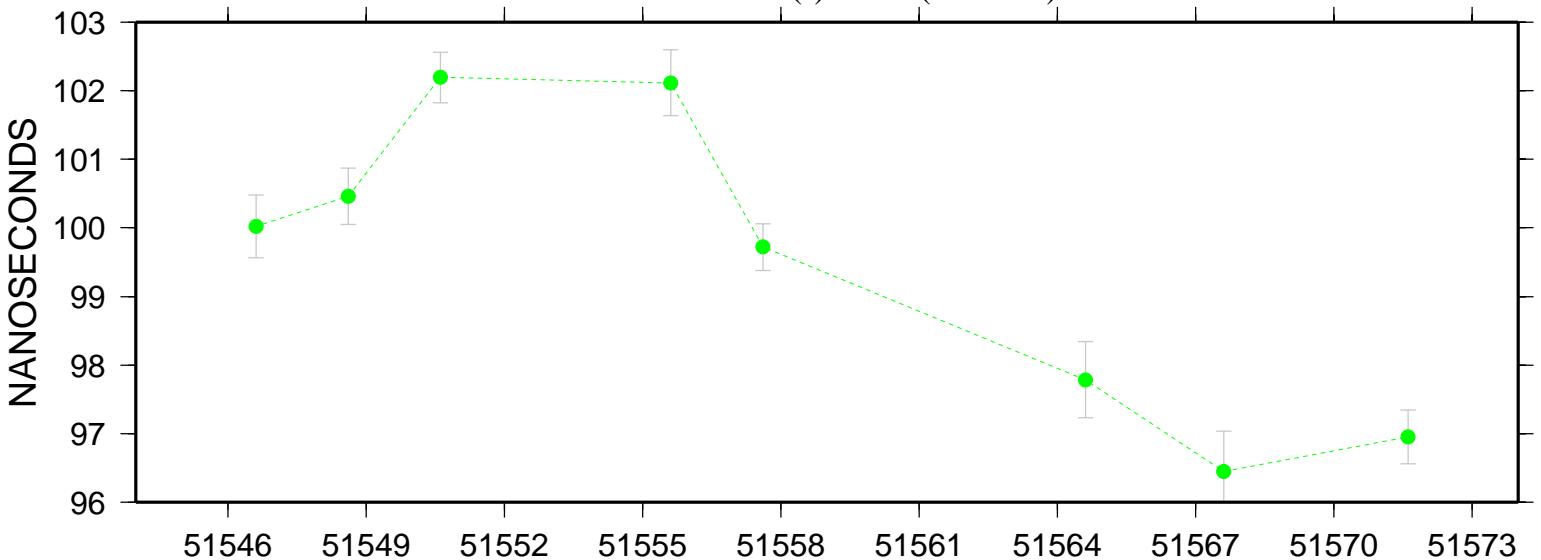
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
	MJD	TW	CV	CP	TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		107.6	0.000	- 661590.594CP			107.6		4.0	0.047
51545.5000		104.7	-0.640				105.4		4.1	0.094
51546.6097	98.8	106.4	-1.231		-7.6	100.0	107.6	0.5	6.8	0.072
51547.5000		105.5	-1.540				107.0		5.0	0.090
51548.6097	98.9	107.8	-1.583		-8.9	100.5	109.4	0.4	4.5	0.203
51549.5000		107.2	-1.338				108.5		4.9	0.153
51550.6097	100.3	105.4	-1.928		-5.1	102.2	107.3	0.3	4.1	0.112
51551.5000		107.3	-1.858				109.1		5.4	0.117
51552.5000		103.6	-2.090				105.7		5.4	0.098
51553.6097	99.7	107.6			-7.9			0.4	5.2	
51554.5000		110.1	-2.155				112.3		6.1	0.070
51555.6097	100.2	108.7	-1.960		-8.6	102.1	110.7	0.5	6.5	0.070
51556.5000		105.1							6.3	
51557.6097	98.4	107.8	-1.334		-9.4	99.7	109.2	0.3	6.2	0.065
51558.5000		108.0	-1.120				109.2		5.4	0.170
51559.5000		107.3							7.1	
51560.5000		109.1	-0.362				109.5		8.3	0.051
51561.5000		106.4	0.107				106.3		6.8	0.091
51562.6097	99.3	107.3			-7.9			0.5	7.9	
51563.5000		110.4	0.854				109.5		6.9	0.128
51564.6097	98.4	110.3	0.624		-11.9	97.8	109.7	0.5	7.0	0.121
51565.5000		108.3	0.327				108.0		5.8	0.152
51566.5000		107.1							5.9	
51567.6097	94.7	106.0	-1.713		-11.3	96.4	107.7	0.6	3.8	0.089
51568.5000		104.2	-2.424				106.7		6.5	0.073
51569.5000		101.8	-3.193				105.0		4.6	0.072
51570.5000		104.6	-3.847				108.5		5.6	0.076
51571.6097	92.2	98.0	-4.786		-5.8	96.9	102.8	0.4	4.9	0.044
51572.5000		98.0	-5.393				103.4		5.8	0.063
51573.5000		98.0	-6.232				104.3		5.5	0.144

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

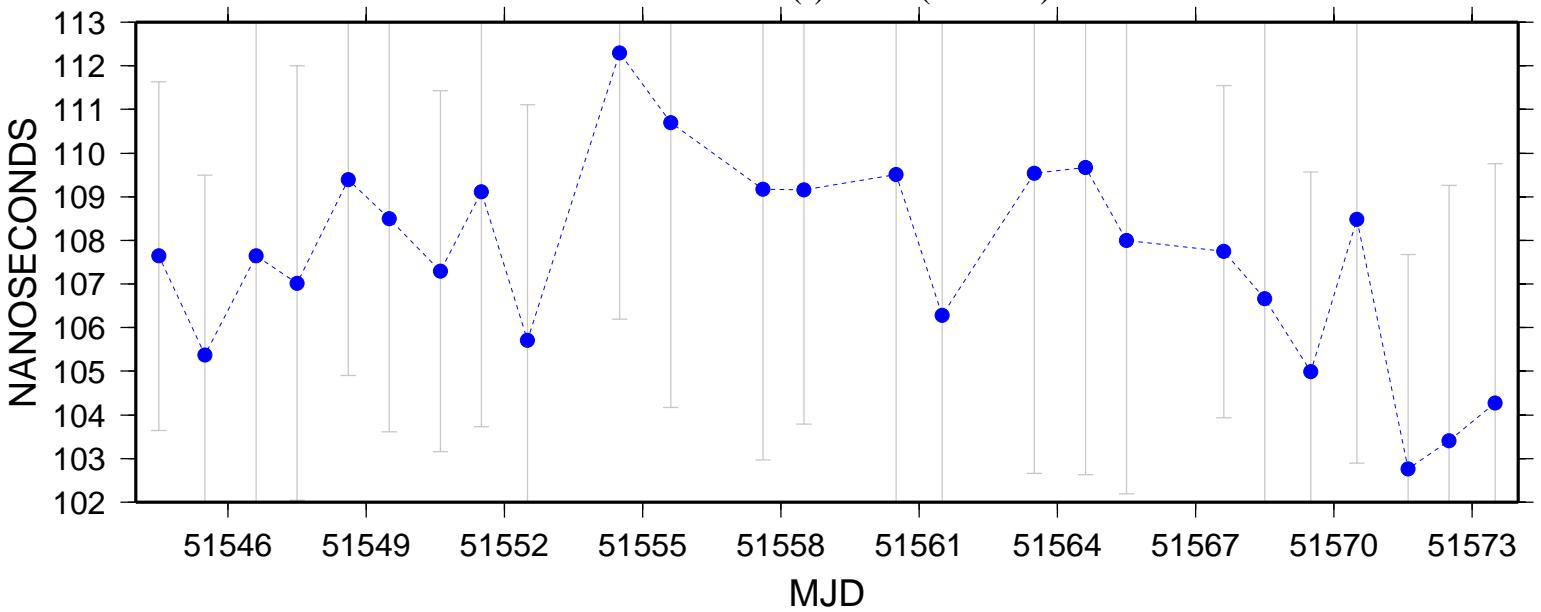
### USNO(f)-NPL (TW-CV)



### USNO(f)-NPL (TW-CP)



### USNO(f)-NPL (CV-CP)



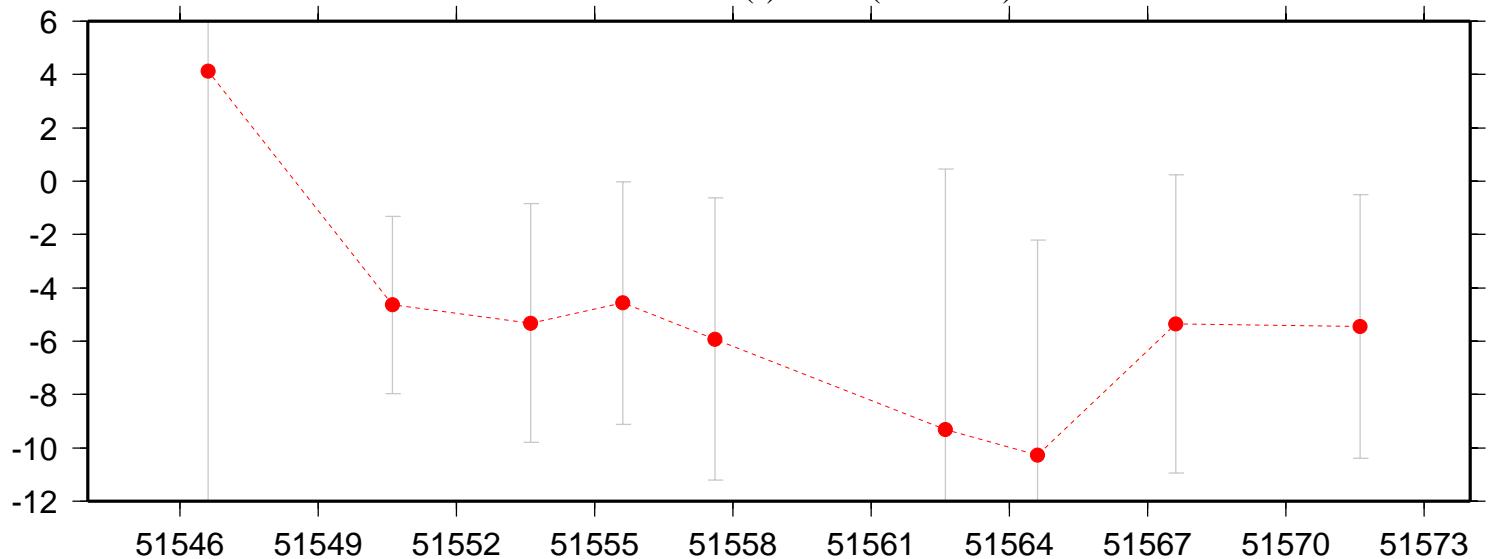
# USNO(f) - PTB

	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-26.1	0.000	- 652948.999CP			-26.1		4.3	0.267
51545.5000		-27.1	-0.219				-26.9		3.1	20.150
51546.6160	-23.4	-27.5	9.365		4.1	-32.7	-36.9	0.7	34.7	0.393
51547.5000		-16.9	10.698				-27.6		4.3	0.389
51548.5000		-15.4	12.408				-27.8		3.4	0.260
51549.5000		-11.3	12.351				-23.7		4.8	0.333
51550.6160	-17.1	-12.4	13.522		-4.6	-30.6	-26.0	0.6	3.3	0.273
51551.5000		-11.2	13.556				-24.7		3.9	0.269
51552.5000		-13.1	14.191				-27.3		5.7	0.329
51553.6160	-14.9	-9.6			-5.3			0.7	4.4	
51554.5000		-5.2	15.252				-20.5		5.1	0.239
51555.6160	-13.7	-9.2	15.845		-4.6	-29.6	-25.0	0.5	4.5	0.376
51556.5000		-10.7							5.6	
51557.6160	-14.2	-8.3	15.133		-5.9	-29.3	-23.4	0.4	5.3	0.268
51558.5000		-10.8	15.424				-26.2		5.7	0.184
51559.5000		-10.6							5.2	
51560.5000		-7.5	16.097				-23.6		7.6	0.198
51561.5000		-6.8	16.841				-23.6		8.0	0.290
51562.6160	-15.3	-6.0			-9.3			0.7	9.8	
51563.5000		-4.3	20.079				-24.3		6.0	0.223
51564.6160	-12.8	-2.5	22.186		-10.3	-34.9	-24.7	0.7	8.0	0.392
51565.5000		-2.8	22.058				-24.9		3.6	0.351
51566.5000		-6.3							5.1	
51567.6160	-11.1	-5.8	23.270		-5.4	-34.4	-29.1	0.6	5.6	0.213
51568.5000		-3.4	23.336				-26.7		5.5	0.264
51569.5000		-3.5	26.112				-29.6		3.4	0.290
51570.5000		0.6	29.981				-29.4		4.0	0.399
51571.6160	-1.7	3.8	32.356		-5.4	-34.0	-28.6	0.4	4.9	0.332
51572.5000		6.1	33.212				-27.1		5.0	0.192
51573.5000		7.1	34.658				-27.5		3.9	0.267

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

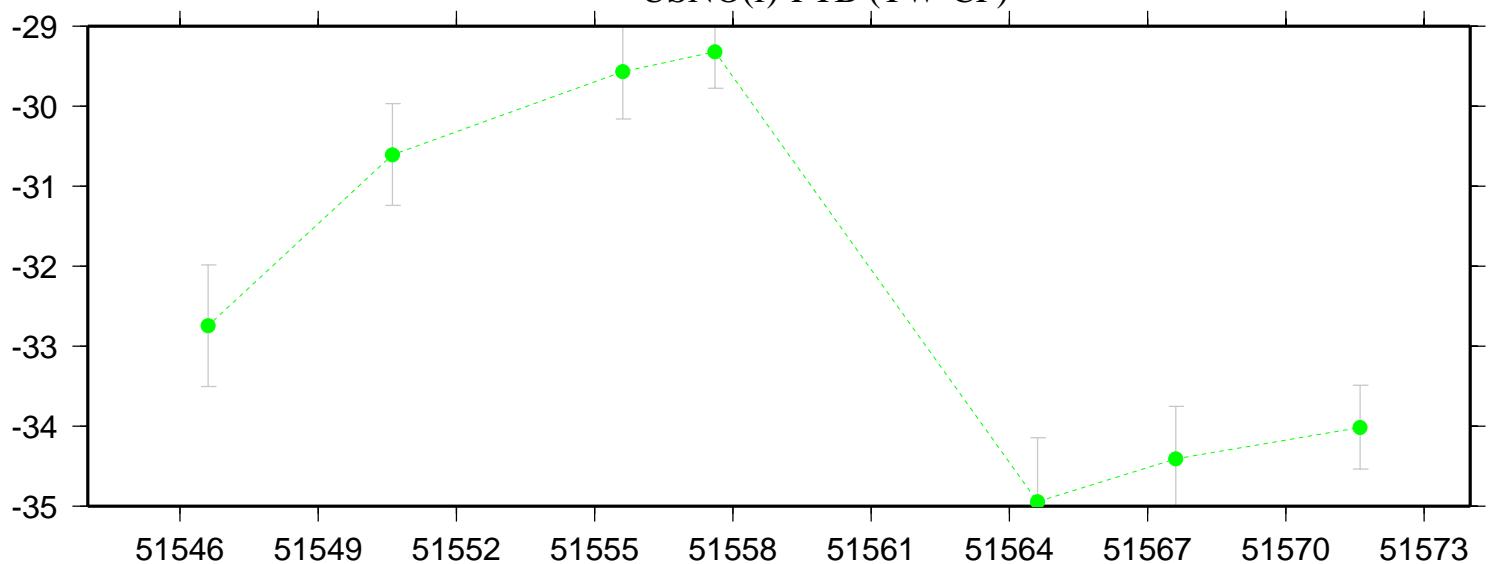
### USNO(f)-PTB (TW-CV)

NANOSECONDS



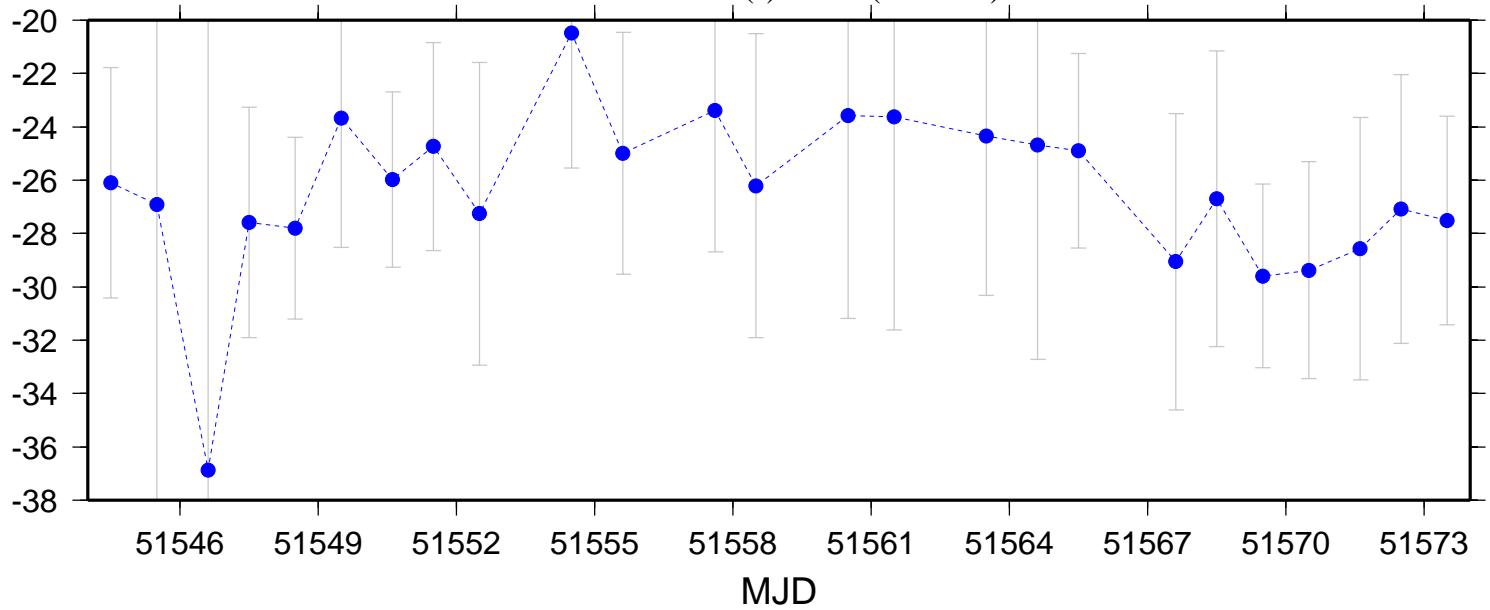
### USNO(f)-PTB (TW-CP)

NANOSECONDS



### USNO(f)-PTB (CV-CP)

NANOSECONDS

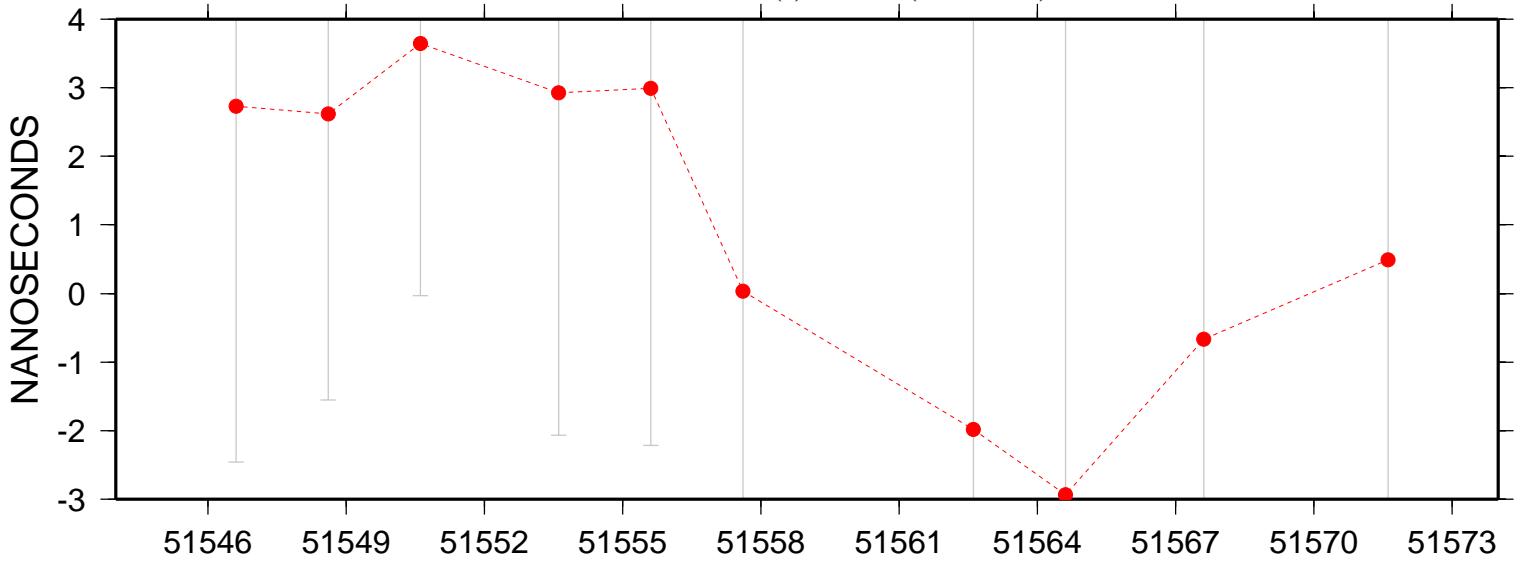


# USNO(f) - TUG

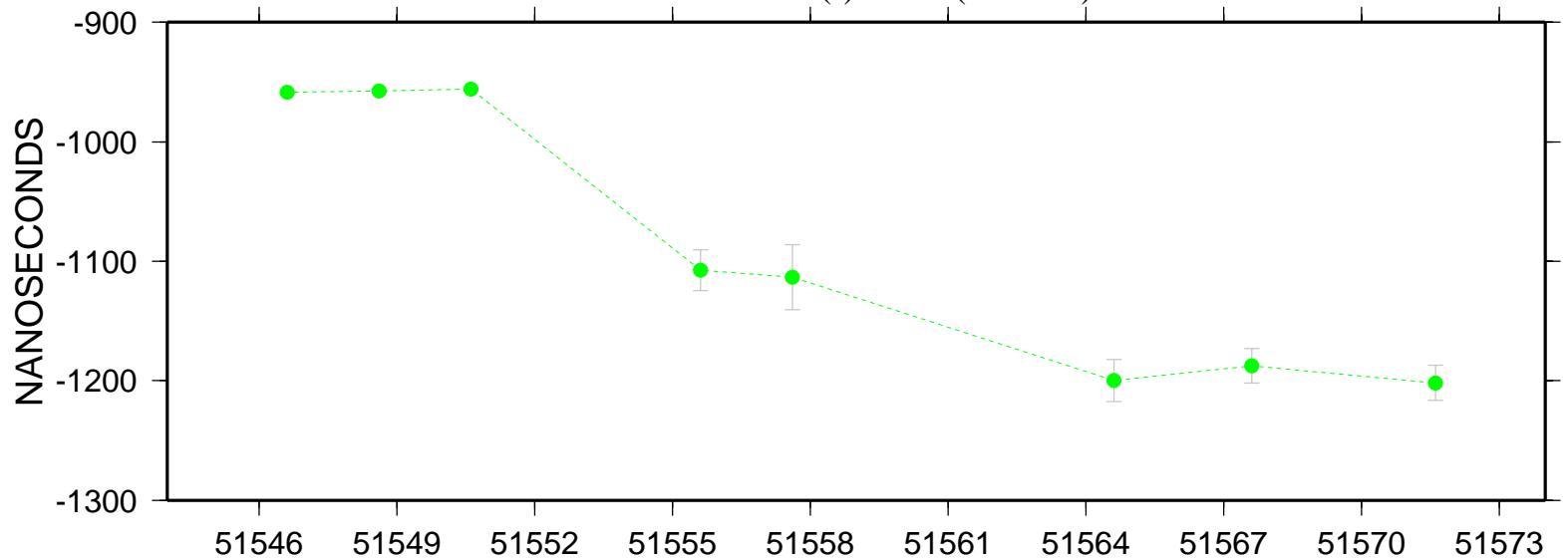
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-960.4	0.000	- 653719.551CP			-960.4		4.8	0.396
51545.5000		-965.9	-3.020				-962.9		3.9	0.721
51546.6076	-966.9	-969.6	-8.331		2.7	-958.5	-961.3	0.7	5.1	0.743
51547.5000		-976.0	-14.874				-961.2		5.2	0.376
51548.6076	-979.2	-981.8	-21.709		2.6	-957.5	-960.1	0.6	4.1	0.879
51549.5000		-987.5	-27.980				-959.5		5.6	0.555
51550.6076	-990.1	-993.7	-33.931		3.6	-956.1	-959.8	0.6	3.6	0.581
51551.5000		-994.6	-34.135				-960.5		4.1	0.768
51552.5000		-998.0	-35.513				-962.5		6.3	0.803
51553.6076	-994.5	-997.4			2.9			0.8	4.9	
51554.5000		-998.5	121.042	- 172.673CP			-1119.5		5.9	15.572
51555.6076	-999.7	-1002.7	107.789		3.0	-1107.5	-1110.5	0.6	5.2	17.052
51556.5000		-1003.3							6.2	
51557.6076	-1006.5	-1006.5	106.931	- 376.422CP	0.0	-1113.4	-1113.4	0.7	6.2	27.185
51558.5000		-1008.5	103.217				-1111.8		5.5	15.998
51559.5000		-1012.1							5.7	
51560.5000		-1012.5	133.139	- 354.009CP			-1145.6		9.2	16.426
51561.5000		-1014.1	164.206	+ 368.481CP			-1178.3		8.5	27.503
51562.6081	-1015.1	-1013.2			-2.0			0.7	9.9	
51563.5000		-1018.1	172.216	+ 1270.513CP			-1190.3		6.6	19.382
51564.6076	-1024.3	-1021.3	175.432		-2.9	-1199.7	-1196.8	0.9	8.4	17.616
51565.5000		-1022.2	177.930				-1200.1		3.2	15.096
51566.5000		-1026.3							5.1	
51567.6076	-1027.5	-1026.8	160.097	+ 1256.106CP	-0.7	-1187.6	-1186.9	0.7	6.0	14.470
51568.5000		-1027.6	158.552				-1186.1		4.5	14.523
51569.5000		-1034.7	158.859				-1193.5		3.4	14.352
51570.5000		-1036.5	165.639				-1202.1		4.8	13.866
51571.6076	-1040.6	-1041.1	161.087		0.5	-1201.6	-1202.1	0.5	4.5	14.617
51572.5000		-1042.2	158.029				-1200.2		5.9	15.208
51573.5000		-1043.6	164.496				-1208.1		4.3	13.775

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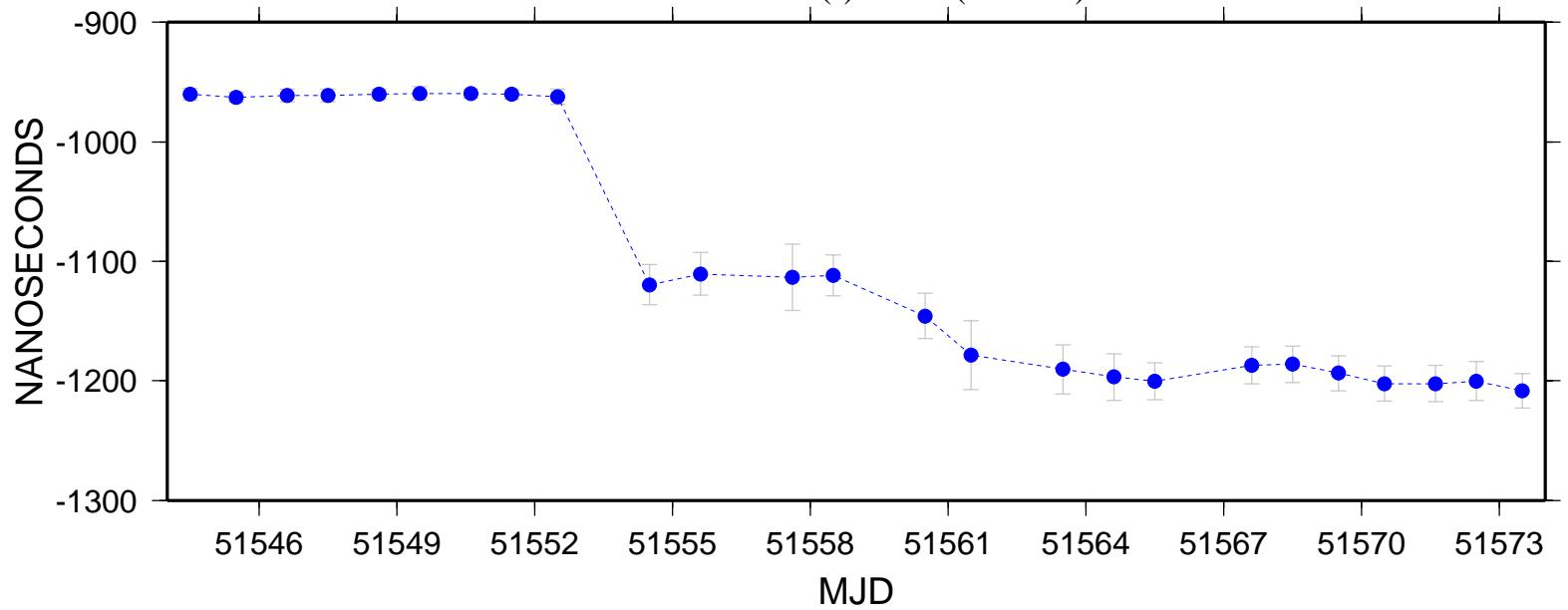
### USNO(f)-TUG (TW-CV)



### USNO(f)-TUG (TW-CP)



### USNO(f)-TUG (CV-CP)

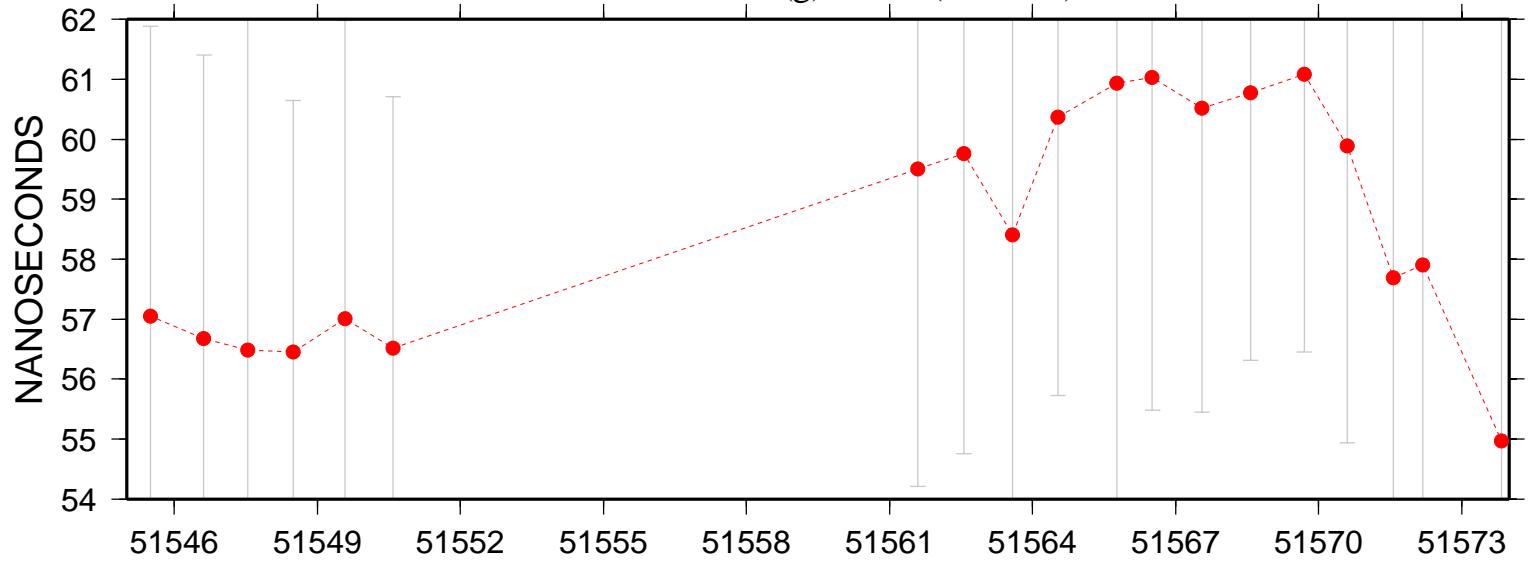


# USNO(g) - AMC

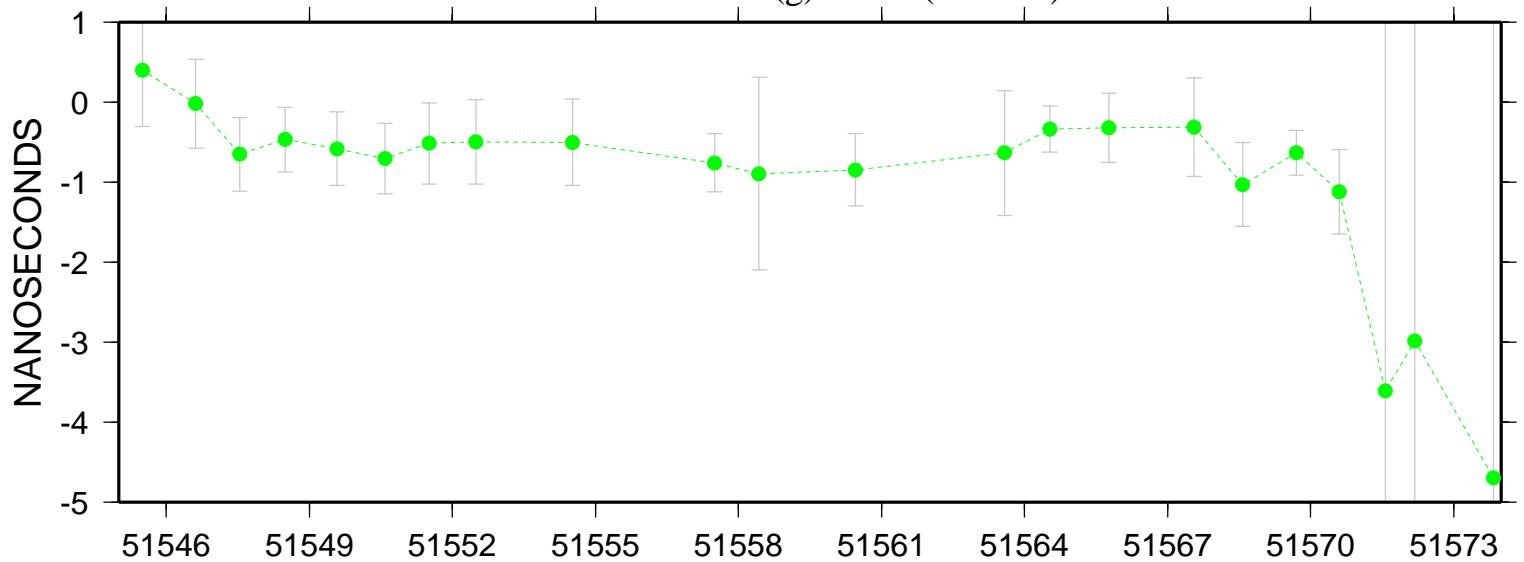
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
	MJD	TW	CV	CP	TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-56.4							4.5	
51545.4927	0.4	-56.7	0.000	- 128369.616CP	57.0	0.4	-56.7	0.7	4.8	0.160
51546.6177	-0.3	-56.9	-0.236		56.7	0.0	-56.7	0.5	4.7	0.122
51547.5344	-0.6	-57.1	0.025		56.5	-0.6	-57.1	0.4	5.6	0.218
51548.4927	0.3	-56.2	0.755		56.5	-0.5	-56.9	0.4	4.2	0.180
51549.5767	0.4	-56.6	0.945		57.0	-0.6	-57.6	0.4	5.0	0.160
51550.5816	0.4	-56.2	1.060		56.5	-0.7	-57.2	0.4	4.2	0.139
51551.5136	0.9		1.410	- 502.113CP		-0.5		0.5		0.034
51552.4920	1.0		1.456			-0.5		0.5		0.051
51553.6383	0.8							0.3		
51554.5139	0.9		1.437	+ 28.468CP		-0.5		0.5		0.050
51555.4511	1.2							0.5		
51556.4094	1.1							0.6		
51557.4941	2.0		2.771			-0.8		0.3		0.149
51558.4309	1.3		2.229			-0.9		1.2		0.067
51559.4941	0.3							0.5		
51560.4531	0.3		1.121			-0.8		0.4		0.090
51561.5986	0.6	-58.9			59.5			0.7	5.3	
51562.5552	1.1	-58.6			59.8			0.7	5.0	
51563.5761	1.3	-57.1	1.931		58.4	-0.6	-59.0	0.8	5.2	0.061
51564.5347	1.6	-58.7	1.985		60.4	-0.3	-60.7	0.3	4.6	0.073
51565.7636	1.5	-59.4	1.866		60.9	-0.3	-61.3	0.4	9.7	0.086
51566.5132	1.3	-59.7			61.0			0.4	5.5	
51567.5559	0.8	-59.7	1.082		60.5	-0.3	-60.8	0.6	5.0	0.065
51568.5768	0.1	-60.7	1.114		60.8	-1.0	-61.8	0.4	4.4	0.369
51569.7024	-0.1	-61.2	0.490		61.1	-0.6	-61.7	0.3	4.6	0.057
51570.5969	-0.3	-60.2	0.784		59.9	-1.1	-61.0	0.5	4.9	0.062
51571.5761	-2.6	-60.3	1.025		57.7	-3.6	-61.3	6.7	5.0	0.133
51572.1906	-1.9	-59.8	1.062		57.9	-3.0	-60.9	7.7	5.2	0.116
51573.8420	-4.0	-58.9	0.733		55.0	-4.7	-59.7	9.1	5.2	0.130

The ADJUSTMENTS column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

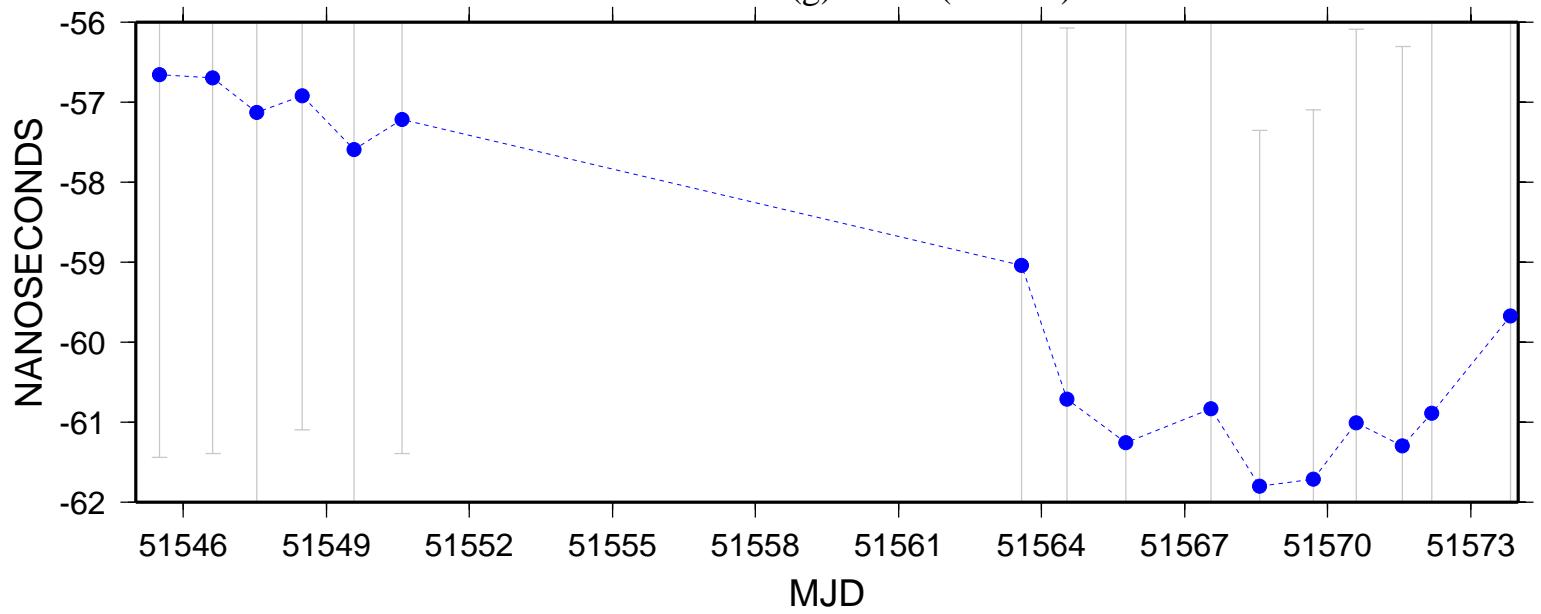
### USNO(g)-AMC (TW-CV)



### USNO(g)-AMC (TW-CP)



### USNO(g)-AMC (CV-CP)

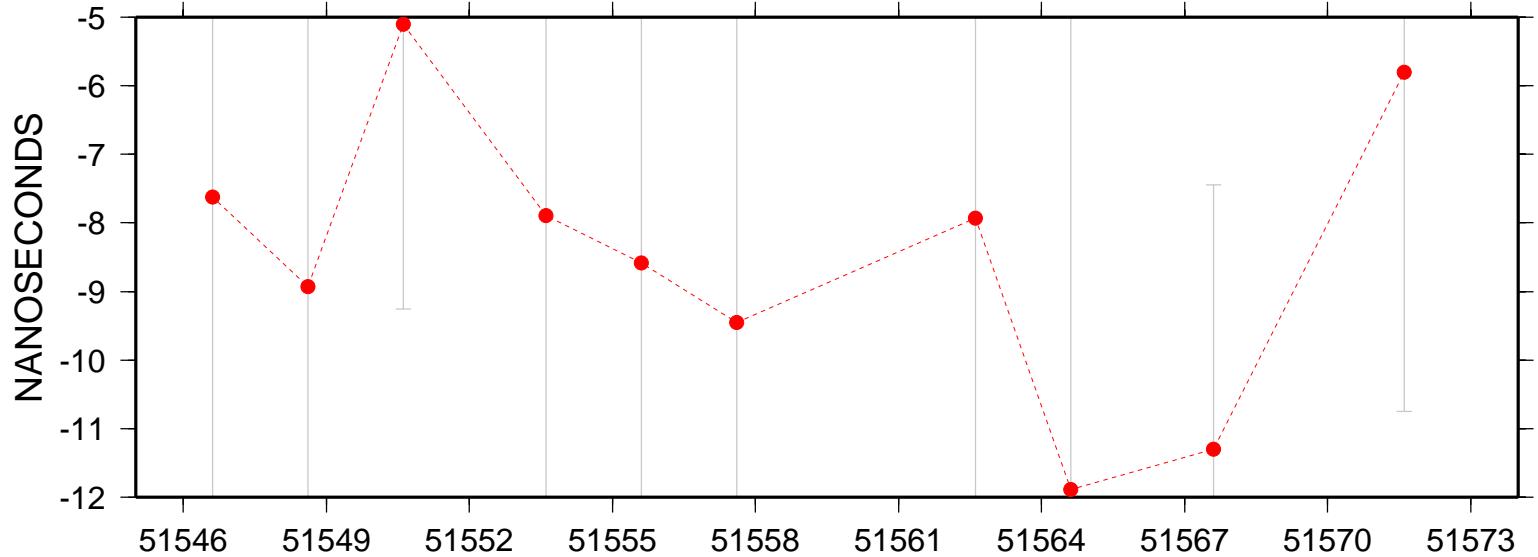


# USNO(h) - NPL

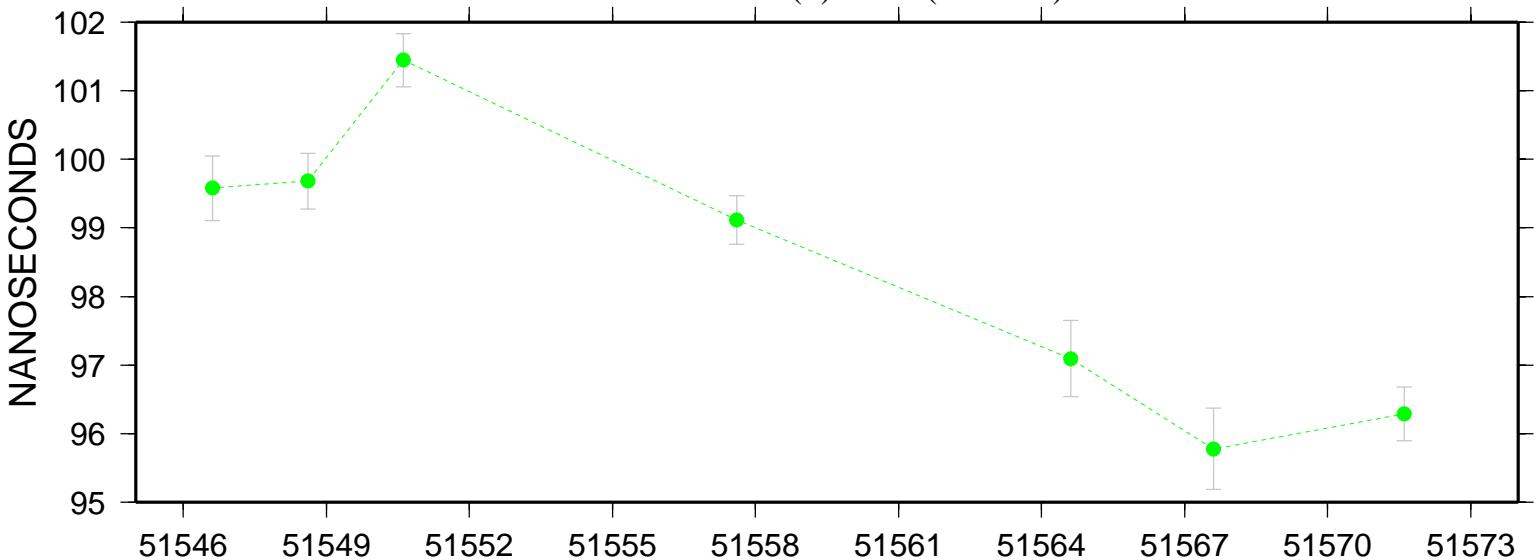
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
	MJD	TW	CV	CP	TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		107.6							4.0	
51545.5000		104.7	0.000	- 136462.300CP			104.7		4.1	0.136
51546.6097	98.8	106.4	-0.787		-7.6	99.6	107.2	0.5	6.8	0.150
51547.5000		105.5	-1.184				106.7		5.0	0.106
51548.6097	98.9	107.8	-0.804		-8.9	99.7	108.6	0.4	4.5	0.185
51549.5000		107.2	-0.501				107.7		4.9	0.224
51550.6097	100.3	105.4	-1.180		-5.1	101.4	106.6	0.3	4.1	0.167
51551.5000		107.3	-1.079				108.3		5.4	0.169
51552.5000		103.6	-1.458				105.1		5.4	0.107
51553.6097	99.7	107.6			-7.9			0.4	5.2	
51554.5000		110.1	-1.540				111.7		6.1	0.107
51555.6097	100.2	108.7			-8.6			0.5	6.5	
51556.5000		105.1							6.3	
51557.6097	98.4	107.8	-0.730		-9.4	99.1	108.6	0.3	6.2	0.123
51558.5000		108.0	-0.682				108.7		5.4	0.154
51559.5000		107.3							7.1	
51560.5000		109.1	-0.057				109.2		8.3	0.068
51561.5000		106.4							6.8	
51562.6097	99.3	107.3			-7.9			0.5	7.9	
51563.5000		110.4	1.450				108.9		6.9	0.137
51564.6097	98.4	110.3	1.315		-11.9	97.1	109.0	0.5	7.0	0.127
51565.5000		108.3	1.088				107.2		5.8	0.169
51566.5000		107.1							5.9	
51567.6097	94.7	106.0	-1.042		-11.3	95.8	107.1	0.6	3.8	0.100
51568.5000		104.2	-1.840				106.1		6.5	0.076
51569.5000		101.8	-2.536				104.3		4.6	0.086
51570.5000		104.6	-3.168				107.8		5.6	0.094
51571.6097	92.2	98.0	-4.124		-5.8	96.3	102.1	0.4	4.9	0.065
51572.5000		98.0	-4.744				102.8		5.8	0.077
51573.5000		98.0	-5.623				103.7		5.5	0.146

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

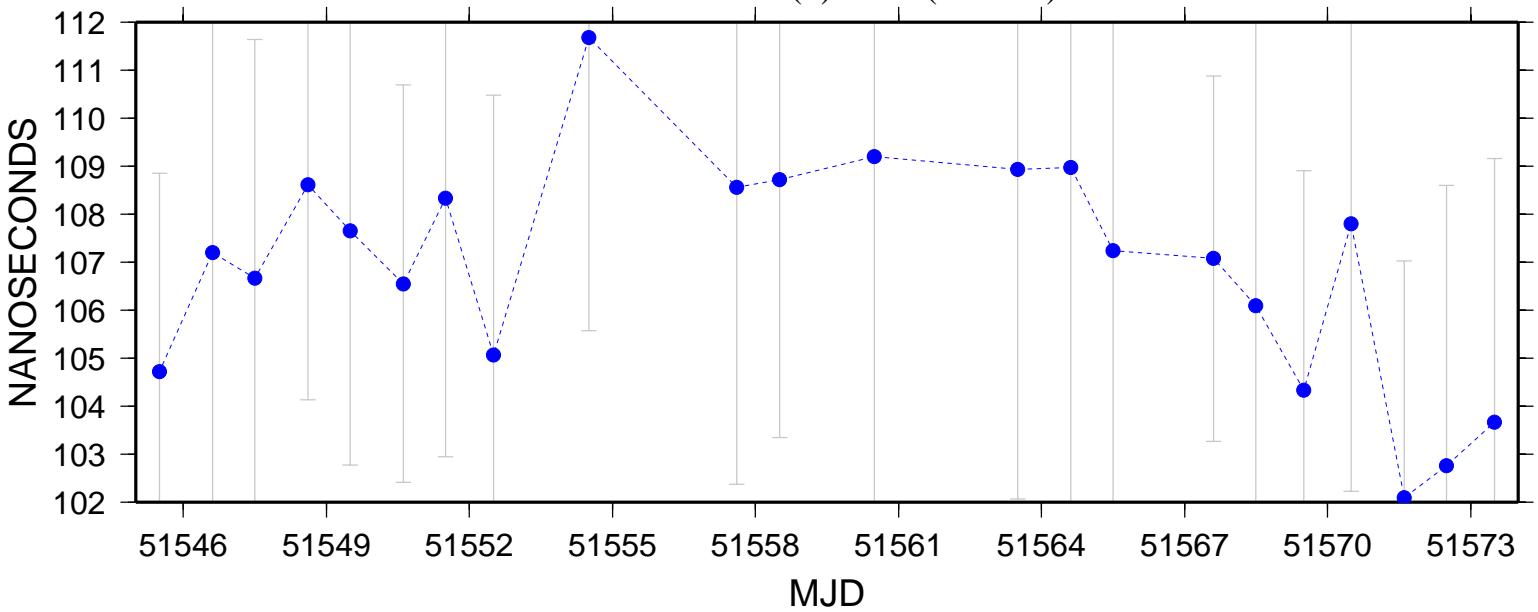
### USNO(h)-NPL (TW-CV)



### USNO(h)-NPL (TW-CP)



### USNO(h)-NPL (CV-CP)

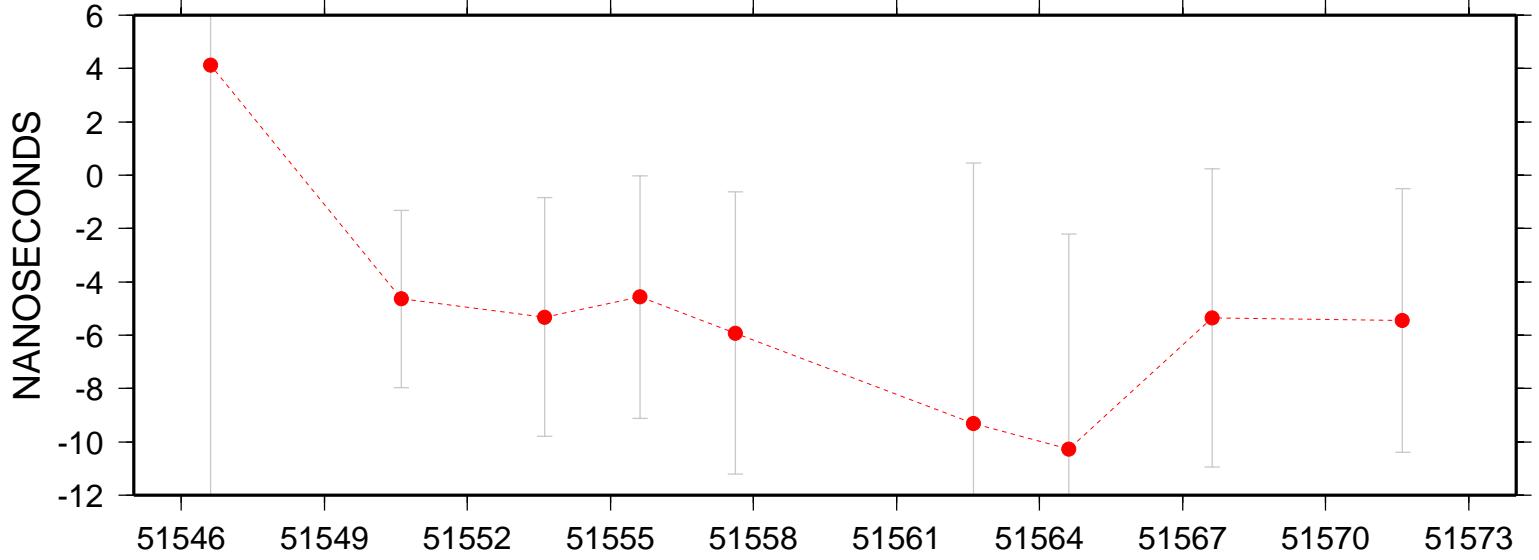


# USNO(h) - PTB

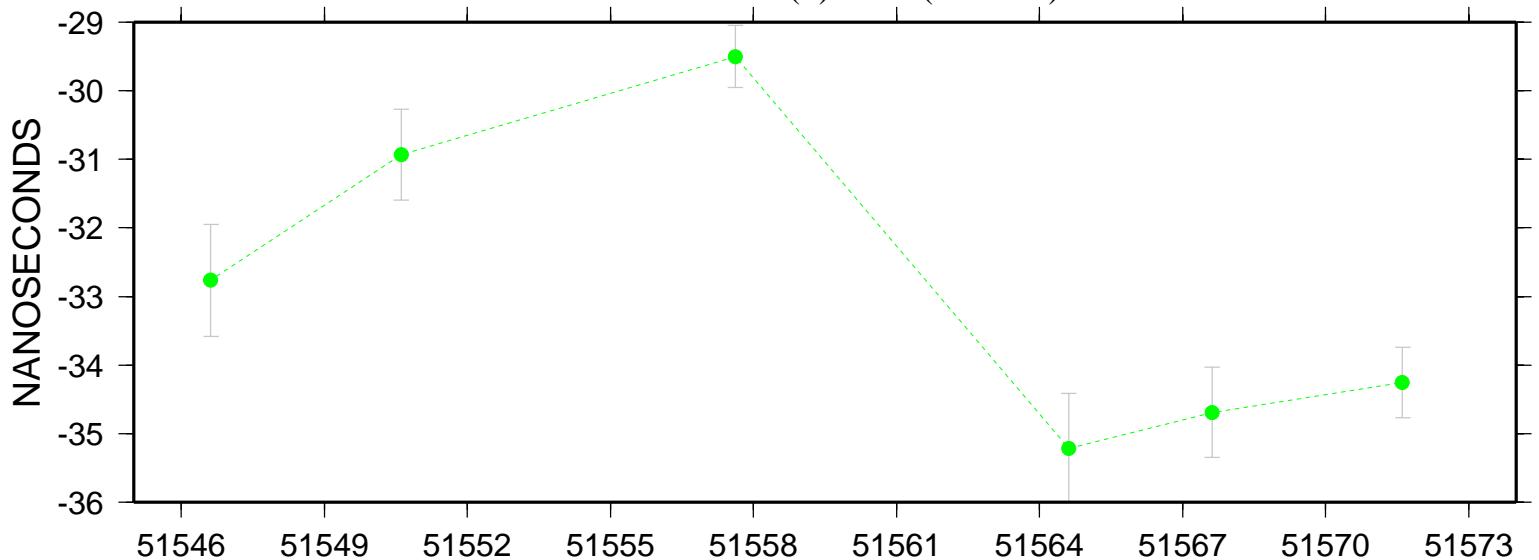
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-26.1							4.3	
51545.5000		-27.1	0.000	- 127821.127 <sub>CP</sub>			-27.1		3.1	20.133
51546.6160	-23.4	-27.5	9.385		4.1	-32.8	-36.9	0.7	34.7	0.490
51547.5000		-16.9	10.633				-27.5		4.3	0.367
51548.5000		-15.4	12.730				-28.1		3.4	0.287
51549.5000		-11.3	12.767				-24.1		4.8	0.395
51550.6160	-17.1	-12.4	13.846		-4.6	-30.9	-26.3	0.6	3.3	0.330
51551.5000		-11.2	13.913				-25.1		3.9	0.286
51552.5000		-13.1	14.401				-27.5		5.7	0.318
51553.6160	-14.9	-9.6			-5.3			0.7	4.4	
51554.5000		-5.2	15.444				-20.7		5.1	0.214
51555.6160	-13.7	-9.2			-4.6			0.5	4.5	
51556.5000		-10.7							5.6	
51557.6160	-14.2	-8.3	15.314		-5.9	-29.5	-23.6	0.4	5.3	0.262
51558.5000		-10.8	15.440				-26.2		5.7	0.192
51559.5000		-10.6							5.2	
51560.5000		-7.5	15.980				-23.4		7.6	0.189
51561.5000		-6.8							8.0	
51562.6160	-15.3	-6.0			-9.3			0.7	9.8	
51563.5000		-4.3	20.254				-24.5		6.0	0.217
51564.6160	-12.8	-2.5	22.456		-10.3	-35.2	-24.9	0.7	8.0	0.395
51565.5000		-2.8	22.397				-25.2		3.6	0.362
51566.5000		-6.3							5.1	
51567.6160	-11.1	-5.8	23.549		-5.4	-34.7	-29.3	0.6	5.6	0.216
51568.5000		-3.4	23.498				-26.9		5.5	0.268
51569.5000		-3.5	26.347				-29.8		3.4	0.298
51570.5000		0.6	30.237				-29.6		4.0	0.399
51571.6160	-1.7	3.8	32.595		-5.4	-34.3	-28.8	0.4	4.9	0.318
51572.5000		6.1	33.439				-27.3		5.0	0.197
51573.5000		7.1	34.844				-27.7		3.9	0.267

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

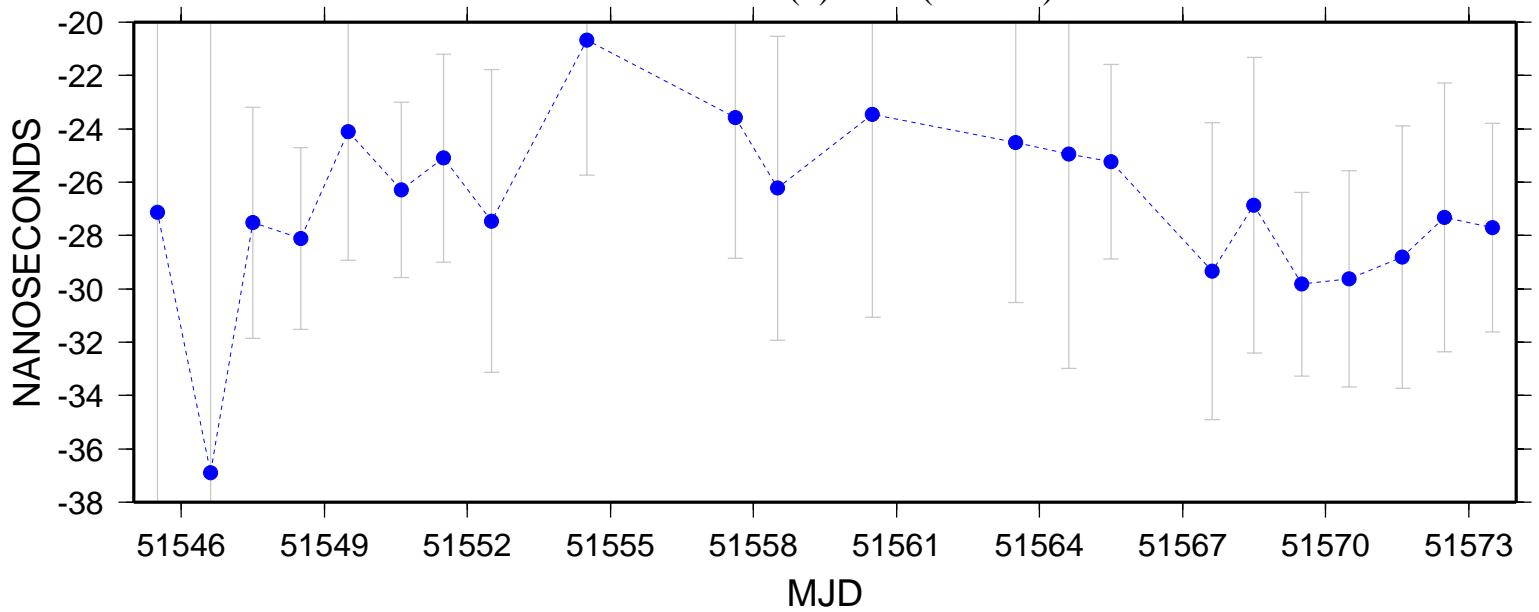
USNO(h)-PTB (TW-CV)



USNO(h)-PTB (TW-CP)



USNO(h)-PTB (CV-CP)

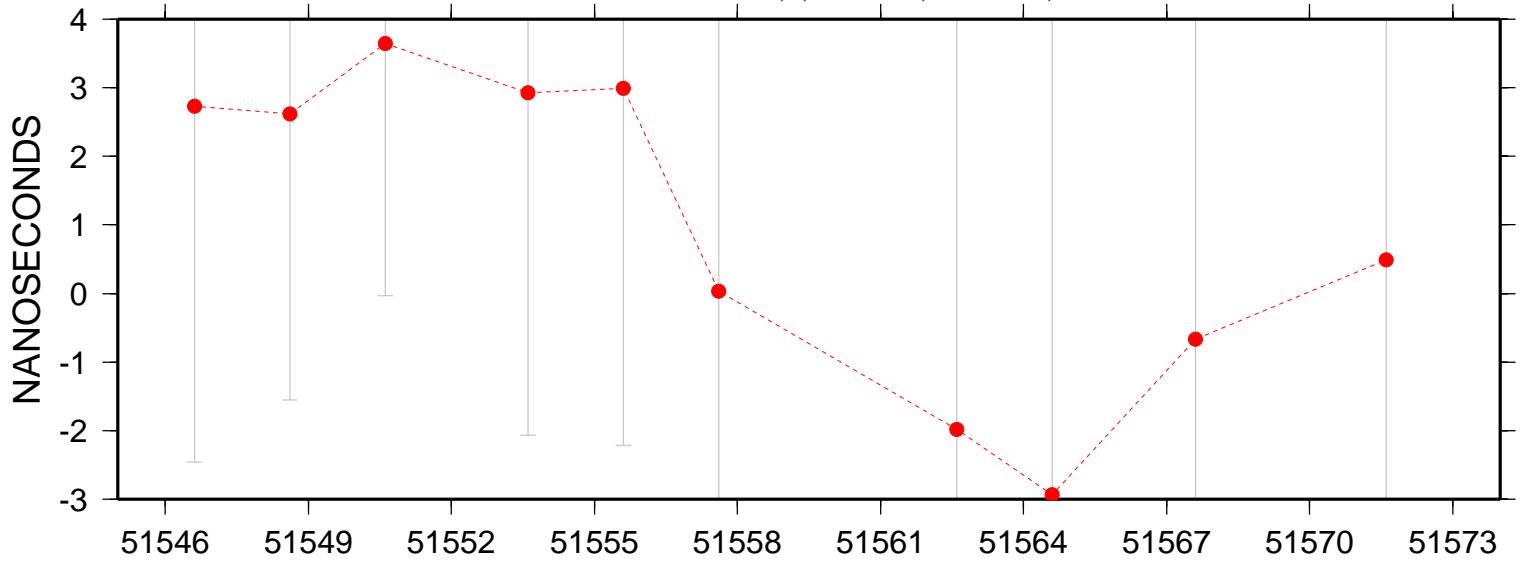


# USNO(h) - TUG

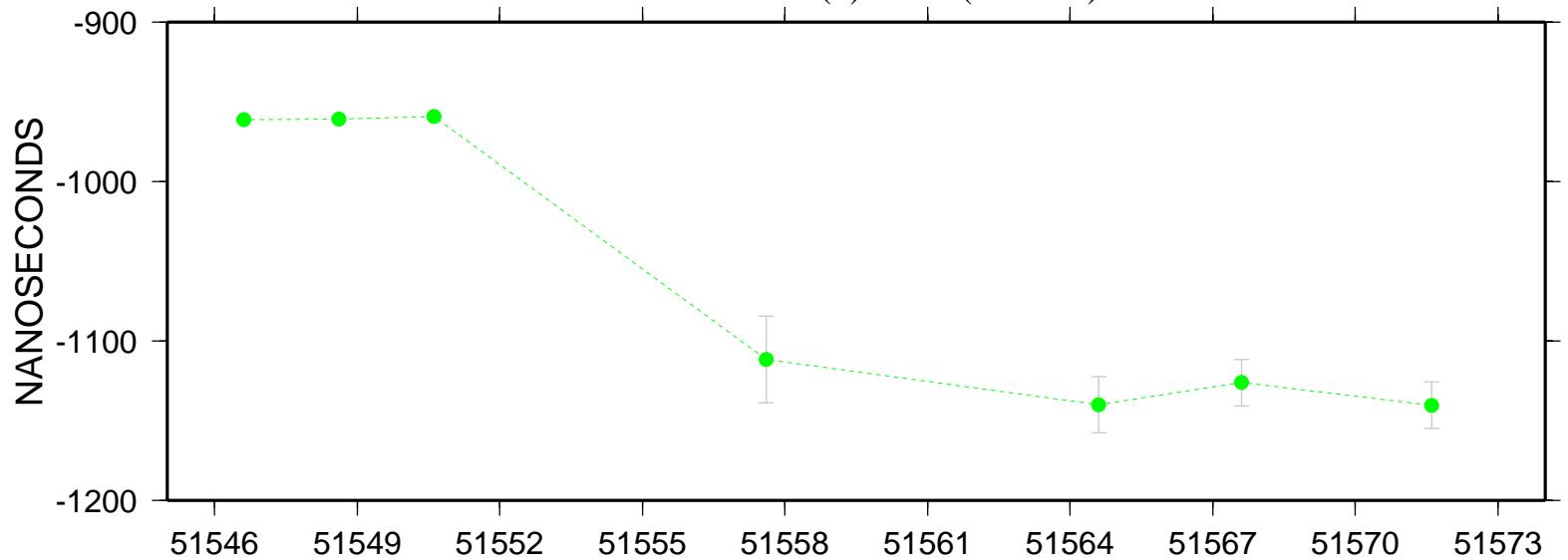
	TIME TRANS. 1-DAY AVE. (ns)			ADJUSTMENTS (ns)	TIME TRANS. DIFFERENCES (ns)			RMS SCATTER OF DAILY LINEAR FIT (ns)		
MJD	TW	CV	CP		TW-CV	TW-CP	CV-CP	TW	CV	CP
51544.5000		-960.4							4.8	
51545.5000		-965.9	0.000	- 128588.877 <sub>CP</sub>			-965.9		3.9	0.800
51546.6076	-966.9	-969.6	-5.507		2.7	-961.4	-964.1	0.7	5.1	0.692
51547.5000		-976.0	-12.138				-963.9		5.2	0.387
51548.6076	-979.2	-981.8	-18.551		2.6	-960.6	-963.2	0.6	4.1	0.938
51549.5000		-987.5	-24.763				-962.7		5.6	0.567
51550.6076	-990.1	-993.7	-30.804		3.6	-959.3	-962.9	0.6	3.6	0.589
51551.5000		-994.6	-30.977				-963.6		4.1	0.828
51552.5000		-998.0	-32.501				-965.5		6.3	0.788
51553.6076	-994.5	-997.4			2.9			0.8	4.9	
51554.5000		-998.5	124.049	- 172.660 <sub>CP</sub>			-1122.5		5.9	15.577
51555.6076	-999.7	-1002.7			3.0			0.6	5.2	
51556.5000		-1003.3							6.2	
51557.6076	-1006.5	-1006.5	105.098	- 381.239 <sub>CP</sub>	0.0	-1111.6	-1111.6	0.7	6.2	27.155
51558.5000		-1008.5	101.218				-1109.8		5.5	15.985
51559.5000		-1012.1							5.7	
51560.5000		-1012.5	129.788	- 360.045 <sub>CP</sub>			-1142.3		9.2	16.430
51561.5000		-1014.1							8.5	
51562.6081	-1015.1	-1013.2			-2.0			0.7	9.9	
51563.5000		-1018.1	112.419	+ 1207.739 <sub>CP</sub>			-1130.6		6.6	19.378
51564.6076	-1024.3	-1021.3	115.728		-2.9	-1140.0	-1137.0	0.9	8.4	17.611
51565.5000		-1022.2	118.297				-1140.5		3.2	15.096
51566.5000		-1026.3							5.1	
51567.6076	-1027.5	-1026.8	98.720	+ 1191.678 <sub>CP</sub>	-0.7	-1126.2	-1125.5	0.7	6.0	14.465
51568.5000		-1027.6	97.087				-1124.7		4.5	14.526
51569.5000		-1034.7	97.468				-1132.1		3.4	14.355
51570.5000		-1036.5	104.269				-1140.8		4.8	13.864
51571.6076	-1040.6	-1041.1	99.701		0.5	-1140.3	-1140.8	0.5	4.5	14.619
51572.5000		-1042.2	96.631				-1138.8		5.9	15.199
51573.5000		-1043.6	103.056				-1146.7		4.3	13.775

The **ADJUSTMENTS** column indicates any manual adjustments (e.g. calibration) that have been applied to either TW, CV, or CP data. In particular, since CP data is currently obtained from non-calibrated systems, arbitrary offsets are often applied to CP data to keep column widths small.

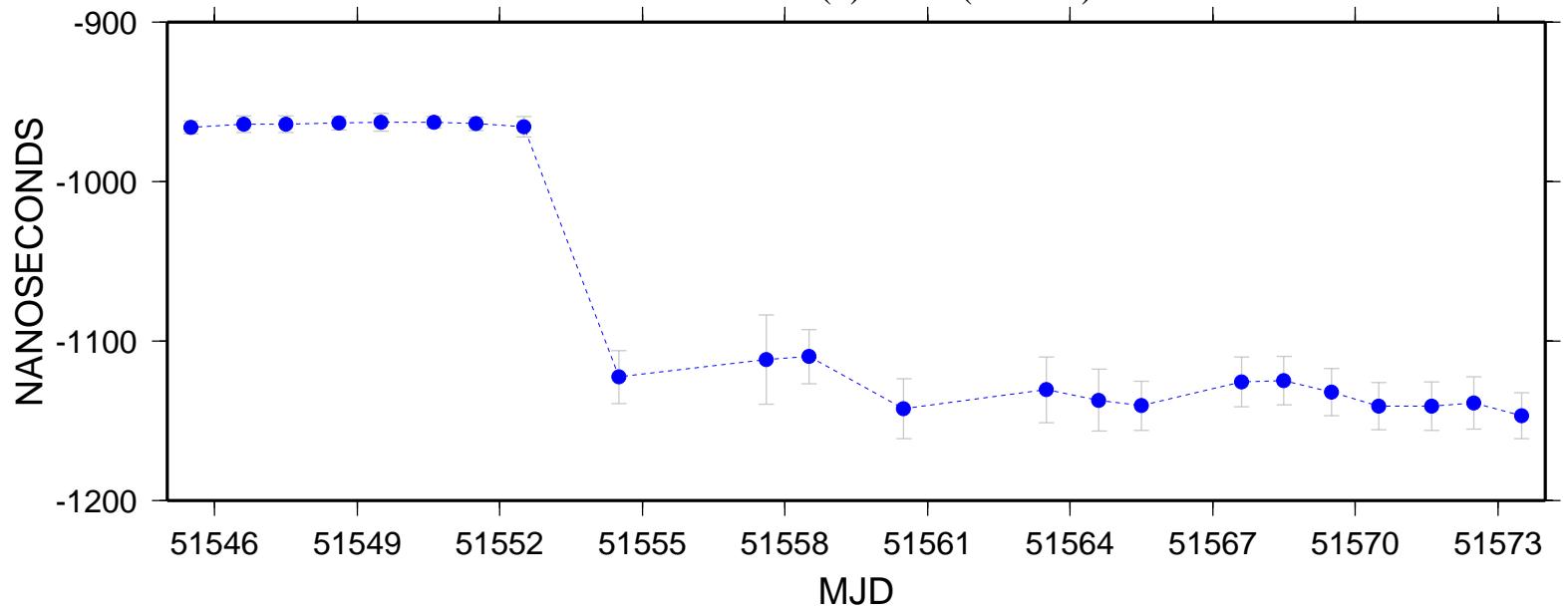
### USNO(h)-TUG (TW-CV)



### USNO(h)-TUG (TW-CP)



### USNO(h)-TUG (CV-CP)



<b>AMC</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> AOATWT-1000  <b>antenna:</b> 1.8m-VSAT  <b>reference standard name:</b> UTC(USNOAMC(MC1))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> AOA2 SN113  <b>receiver model:</b> AOA-TTR4P  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNOAMC(MC1))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b>AOA2 calibration history:</b></p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> AMC2  <b>receiver model:</b> AOA SNR-12 ACT  <b>antenna:</b> AOAD-M_T  <b>reference standard name:</b> UTC(USNOAMC(MC1))  <b>reference standard type:</b> steered H-MASER</p> <p><b><u>LOGS:</u></b></p> <p>51554 08-Jan-00 <a href="#">receiver stopped tracking at ~00:00; restarted</a></p> <p><b><u>NOTES:</u></b></p>

<b>NPL</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> SATRE  <b>antenna:</b> 1.8m-VSAT  <b>reference standard name:</b> UTC(NPL)  <b>reference standard type:</b> H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> xxx xxx  <b>receiver model:</b> xxx  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(NPL)  <b>reference standard type:</b> H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> NPLB  <b>receiver model:</b> Ashtec Z-12  <b>antenna:</b>  <b>reference standard name:</b> UTC(NPL)  <b>reference standard type:</b> H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>

<b>PTB</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> SATRE  <b>antenna:</b> 1.8m-VSAT  <b>reference standard name:</b> UTC(PTB)  <b>reference standard type:</b> CESIUM(steered)</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>
<b>CV</b>	<p><b>receiver name (local):</b> xxx xxx  <b>receiver model:</b> AOA-TTR5  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(PTB)  <b>reference standard type:</b> CESIUM(steered)</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>
<b>CP</b>	<p><b>receiver name (local):</b> PTBA  <b>receiver model:</b> modified Ashtech Z-12T GeTT terminal  <b>antenna:</b> choke-ring  <b>reference standard name:</b> H2  <b>reference standard type:</b> H-MASER</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p> <p>CP clock estimates at PTB are referenced to UTC(PTB) using data from an SRS620 time interval counter.</p>

<b>TUG</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> SATRE  <b>antenna:</b> 1.8m-VSAT  <b>reference standard name:</b> UTC(TUG)  <b>reference standard type:</b> 5071A</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> xxx xxx  <b>receiver model:</b> NBS  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(TUG)  <b>reference standard type:</b> 5071A</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> GRAZ  <b>receiver model:</b> AOA SNR-8000 ACT  <b>antenna:</b> AOAD-M_T NONE  <b>reference standard name:</b> xxx  <b>reference standard type:</b> Changed from H-maser to internal crystal only on January 10, 2000</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b>  The hydrogen maser reference for the carrier phase receiver was removed on January 10, 2000.</p>

<b>USNO(a)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> EACS-TWSTT-2000(sn#103)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>
<b>CV</b>	<p><b>receiver name (local):</b> AOA1 SN12  <b>receiver model:</b> AOA-TTR4P  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b>LOGS:</b></p> <p><b>AOA1 calibration history:</b></p> <p><b>NOTES:</b></p>
<b>CP</b>	<p><b>receiver name (local):</b> USNO  <b>receiver model:</b> AOA SNR-12 ACT  <b>antenna:</b> AOAD-M_T  <b>reference standard name:</b> UTC(USNO(MC3))  <b>reference standard type:</b> steered H-MASER</p> <p><b>LOGS:</b></p> <p>51562 03-Jan-00 <a href="#">receiver restarted at ~12:32</a>  51563 16-Jan-00 <a href="#">receiver stopped tracking at ~02:00</a>  51566 17-Jan-00 <a href="#">receiver restarted at ~18:08</a>  51567 19-Jan-00 <a href="#">receiver stopped tracking at ~00:01</a></p> <p><b>NOTES:</b></p> <p>CP clock estimates are referenced to UTC(USNO(MC2)) using data from an optic fiber link.</p>

<b>USNO(b)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> Mitrex-2500(sn#85006)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steeded)</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>
<b>CV</b>	<p><b>receiver name (local):</b> TTR1 SN440  <b>receiver model:</b> AOA-TTR6  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steeded)</p> <p><b>LOGS:</b></p> <p><b>TTR1 calibration history:</b>  TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68  TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67  TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68  TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><b>NOTES:</b></p>
<b>CP</b>	<p><b>receiver name (local):</b> USNO  <b>receiver model:</b> AOA SNR-12 ACT  <b>antenna:</b> AOAD-M_T  <b>reference standard name:</b> UTC(USNO(MC3))  <b>reference standard type:</b> steered H-MASER</p> <p><b>LOGS:</b></p> <p>51562 03-Jan-00 <a href="#">receiver restarted at ~12:32</a>  51563 16-Jan-00 <a href="#">receiver stopped tracking at ~02:00</a>  51566 17-Jan-00 <a href="#">receiver restarted at ~18:08</a>  51567 19-Jan-00 <a href="#">receiver stopped tracking at ~00:01</a></p> <p><b>NOTES:</b></p> <p>CP clock estimates are referenced to UTC(USNO(MC2)) using data from an optic fiber link.</p>

<b>USNO(c)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> EACS-TWSTT-2000(sn#103)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> AOA1 SNxxx  <b>receiver model:</b> AOA-TTR4P  <b>antenna:</b> XXX  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b>AOA1 calibration history:</b></p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> USNB  <b>receiver model:</b> modified Ashtech Z-12T GeTT terminal  <b>antenna:</b>  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> steered H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>

<b>USNO(d)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> Mitrex-2500(sn#85006)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>
<b>CV</b>	<p><b>receiver name (local):</b> TTR1 SN440  <b>receiver model:</b> AOA-TTR6  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b>LOGS:</b></p> <p><b>TTR1 calibration history:</b>  TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68  TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67  TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68  TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><b>NOTES:</b></p>
<b>CP</b>	<p><b>receiver name (local):</b> USNB  <b>receiver model:</b> modified Ashtech Z-12T GeTT terminal  <b>antenna:</b>  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> steered H-MASER</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>

<b>USNO(e)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> EACS-TWSTT-2000(sn#103)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> AOA1 SNxxx  <b>receiver model:</b> AOA-TTR4P  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b>AOA1 calibration history:</b></p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> NIM1  <b>receiver model:</b> Ashtech Z-12  <b>antenna:</b> Geodetic 3  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> steered H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>

<b>USNO(f)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> Mitrex-2500(sn#85006)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> TTR1 SN440  <b>receiver model:</b> AOA-TTR6  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b>TTR1 calibration history:</b>  TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68  TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67  TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68  TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> NIM1  <b>receiver model:</b> Ashtech Z-12  <b>antenna:</b> Geodetic 3  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> steered H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>

<b>USNO(g)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> EACS-TWSTT-2000(sn#103)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>
<b>CV</b>	<p><b>receiver name (local):</b> AOA1 SNxxx  <b>receiver model:</b> AOA-TTR4P  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b><u>LOGS:</u></b></p> <p><b>AOA1 calibration history:</b></p> <p><b><u>NOTES:</u></b></p>
<b>CP</b>	<p><b>receiver name (local):</b> NIM2  <b>receiver model:</b> Ashtech Z-12  <b>antenna:</b> Geodetic 3  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> steered H-MASER</p> <p><b><u>LOGS:</u></b></p> <p><b><u>NOTES:</u></b></p>

<b>USNO(h)</b>	<b>Receiver System Hardware Information:</b>
<b>TW</b>	<p><b>modem model:</b> Mitrex-2500(sn#85006)  <b>antenna:</b> 4.6m-steerable-vertex  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>
<b>CV</b>	<p><b>receiver name (local):</b> TTR1 SN440  <b>receiver model:</b> AOA-TTR6  <b>antenna:</b> xxx  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> H-MASER(steered)</p> <p><b>LOGS:</b></p> <p><b>TTR1 calibration history:</b>  TTR1(SN440) delay change on MJD 50566 (04/28/97): Internal=68  TTR1(SN440) delay change on MJD 50973 (06/09/98): Internal=67  TTR1(SN440) delay change on MJD 51135 (11/18/98): Internal=68  TTR1(SN440) delay change on MJD 51260 (03/23/99): Internal=67</p> <p><b>NOTES:</b></p>
<b>CP</b>	<p><b>receiver name (local):</b> NIM2  <b>receiver model:</b> Ashtech Z-12  <b>antenna:</b> Geodetic 3  <b>reference standard name:</b> UTC(USNO(MC2))  <b>reference standard type:</b> steered H-MASER</p> <p><b>LOGS:</b></p> <p><b>NOTES:</b></p>